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THE UNIVERSITY OF ALBERTA
CHILDREN'S PERCEPTIONS OF THE REALITY OR
UNREALITY OF SELECTED PHENOMENA

by



JOYCE BERNICE KRYSOWATY

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled, "Children's Perceptions of the Reality or Unreality of Selected Phenomena," submitted by Joyce Bernice Kryswaty in partial fulfilment of the requirements for the degree of Master of Education.

THE
HISTORY OF THE
CITY OF BOSTON

FROM THE FIRST SETTLEMENT TO THE PRESENT TIME
BY
JOHN H. COLEMAN, ESQ.
OF THE BOSTON BAR.
IN TWO VOLUMES.
VOL. I.

ABSTRACT

The purpose of this study was to (1) investigate the ability of preschool children to identify the reality or unreality of selected fanciful and misleading phenomena, (2) identify some of the factors which are related to the development of this ability, and (3) examine possible trends in the development of the young child's ability to identify the reality or unreality of the selected phenomena.

The ability to identify the reality or unreality of phenomena was investigated by means of a test constructed by the investigator. The test consisted of fifteen items of a fanciful or misleading nature.

The test was individually administered to a sample of seventy-two young children from selected private nursery schools and kindergartens located in middle or upper socio-economic areas of Edmonton, Alberta, Canada. This sample, comprised of thirty-six boys and thirty-six girls, ranged in age from three years through six years, four months.

Correlations were determined by computer analysis between the test scores and each of the following variables: chronological age, mental age, IQ, parental cueing practices, cumulative schooling and sex. In addition, the response patterns of the subjects were studied in an attempt to determine possible developmental features of the ability to identify the reality or unreality of the selected phenomena.

The most important findings of this study were as follows:

1. Chronological age and mental age were both significantly and highly correlated with performance on the test.
2. IQ, parental cueing practices, cumulative schooling, and sex did not correlate significantly with test performance in this study.

It was concluded that maturation is a key factor in the development of the young child's ability to identify the reality or unreality of the selected phenomena.

Two implications for educational practice were hypothesized and recommendations were formulated for further research.

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CHAPTER I

THE PROBLEM, ITS NATURE AND SIGNIFICANCE

I. INTRODUCTION AND BACKGROUND OF THE PROBLEM

The young child is conducted into the realm of fantasy very early in his life by adults whom he trusts. Fanciful content is presented to the child through (1) various classical literature such as Mother Goose, folk and fairy tales; (2) the cult of Santa Claus and the Easter Bunny; and (3) such phenomenal television programs as The Flying Nun, Batman, Space Ghost, Popeye, and Spider Man. Hence, from an adult point of view, the young child's world becomes a mixture of the real and the unreal.

According to Piaget (1952), the young, preschool child is unable to interpret critically the phenomena surrounding him because of certain limitations of his thought processes. Thus, in Piaget's view, it would seem that the child will not form a truly conceptual distinction between what is real and what is imaginative until his thought processes have been freed from these limitations, or in other words, until such time as he enters the concrete operational period at about seven or eight years of age. Prior to this phase, according to Piaget, the child's notions of surrounding phenomena are closely related to his perceptions of those phenomena.

The important role played by the affective processes in the development of perception is stressed by both Piaget (1930, 1954) and the eminent Heinz Werner (1957). The development of autistic perception (perception organized around wish fulfillment) and the influence of such perception upon the cognitive life of the young child have been studied by these two scholars. If it is reasonable to assume that certain fanciful phenomena such as fairies, might be "tied to" or imbedded in affective components of meaning, then it would seem reasonable to assume that the role played by autism in perception is directly relevant to the young child's notions of real and imaginative phenomena.

Although many studies, largely inspired by the findings of Piaget, have investigated children's notions of reality and causality, very few studies have been directed specifically toward ascertaining the child's knowledge of what kinds of phenomena do not have an existence in the real world, as defined by adults, but are instead furnishings of an imaginary world.

II. THE PROBLEM

Statement of the problem. It is the purpose of this study to (1) investigate the ability of preschool children to identify the reality or unreality of selected fanciful and misleading phenomena, (2) identify some of the factors which are related to the development of this ability, and

(3) examine possible trends in the development of the young child's ability to identify the reality or unreality of selected fanciful and misleading phenomena.

Questions which the study seeks to answer. The ability to identify the reality or unreality of selected fanciful and misleading phenomena will be studied in relation to the factors of chronological age, mental age, intelligence, selected parental cueing practices, cumulative schooling and sex. The following questions will be posed:

1. Is there a significant correlation between chronological age and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?
2. Is there a significant correlation between mental age and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?
3. Is there a significant correlation between IQ and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?
4. a) Is there a significant correlation between direct cueing of the child by the parents and the child's ability to identify the reality or unreality of selected fanciful and misleading phenomena?

- b) Is there a significant correlation between no cueing of the child by the parents (indifference) and the child's ability to identify the reality or unreality of selected fanciful and misleading phenomena?
 - c) Is there a significant correlation between miscueing of the child by the parents and the child's ability to identify the reality or unreality of selected fanciful and misleading phenomena?
 - d) Is there a significant correlation between cueing consistency or inconsistency of the child by the parents and the child's ability to identify the reality or unreality of selected fanciful and misleading phenomena?
5. Is there a significant correlation between cumulative months of schooling and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?
6. Is there a significant correlation between sex and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?

In addition, the data will be examined for possible developmental features. In this context the following questions will be posed:

7. Is there a progressive development with age of the ability to identify the reality or unreality of fanciful and misleading phenomena?
8. Are there any discernible tendencies in the development of the ability to identify the reality or unreality of fanciful and misleading phenomena as indicated by the subjects' performance on the test?

III. THE EXPERIMENTAL SETTING

The sample for the investigation was drawn from the preschool population in the private schools of Edmonton. From an initial list of twenty-nine registered kindergartens taught by certified teachers* and ten nursery schools also taught by certified teachers, six kindergartens and six nursery schools were chosen randomly. The joint population of these schools was then listed, divided into three age groups, and each age group further divided into two groups by sex. This procedure yielded a total of six groups. Then twelve subjects were randomly selected from each age group which yielded a total sample of seventy-two subjects.

The Real-Unreal Distinctions Test, which consisted of fifteen items (see Chapter III) was designed and administered

*i.e. teachers possessing qualifications for teacher certification in Alberta.

individually to each subject by the investigator. The responses of the subjects were recorded on a specially prepared data collection sheet (see Appendix A) as well as by a verbal record on tape. The tape recording was used as a check on the manually recorded responses for the purposes of scoring.

The criterion test was followed within a week to ten days by the individual administration by the investigator of the Columbia Mental Maturity Scale. Concurrent with the administration of this standardized test to the child, the mother was asked to complete a specially designed cueing inventory, You and Your Child, and to remit information concerning the child's birthdate, age, and total months of attendance at a preschool.

IV. ASSUMPTIONS AND LIMITATIONS OF THE STUDY

Any interpretation of the findings of this investigation should be made only after a consideration of the following assumptions and limitations of the study.

An assumption, based largely upon the studies of causality and basic to this study, is that the young child's ability to recognize or identify the reality or unreality of phenomena can be sufficiently isolated as to be measurable by an objective type instrument. It is further assumed that the criterion test, Real-Unreal Distinctions Test, which was

designed specifically for this study, is in fact a valid measure of the child's ability to identify the reality or unreality of the specific phenomena tested. It would be dangerous to assume that the results of this test could be generalized to any other fanciful or misleading phenomena.

Despite the likelihood that "selective memory" operates to some extent upon the parent's responses to the 'You and Your Child' Cueing Inventory, for the purposes of this study it must be assumed that the instrument yields a fairly valid and reliable indication of the parent's actual cueing practices. This instrument was designed by the investigator specifically for this study. Thus the reader should hold in mind that any relationships posited in regard to cueing practices and the child's ability to identify the reality or unreality of the selected phenomena are based upon the responses to this specific cueing measurement instrument.

It should also be remembered that this study is based upon the responses of a relatively small number of subjects from private schools with possibly very diversified programs and diversified teacher qualifications. No attempt has been made to account for possible differential effects of school instruction upon the child's ability to identify the reality or unreality of the selected phenomena.

V. SIGNIFICANCE OF THE STUDY

Much emphasis is accorded to the development of perception and concept formation in preschool programs today. Educators are most concerned with facilitating discriminating perception, developing basic concepts of the child's surrounding physical and natural world, correcting misconceptions about this same world, and with the promotion of effective thought processes. However, in spite of the fact that fantasy content is part of the child's world, very little attention is directed toward helping the child cognize and differentiate that content from the physical, naturalistic content of the real world. This study is undertaken in the hope that it will contribute some knowledge of children's ideas of the reality or unreality of certain misleading and fanciful phenomena. Also, it is hoped that some knowledge of some of the factors that are related to the development of this ability to differentiate between the real and the unreal will enable the teachers of young children to better provide the kinds of experiences that will facilitate such development and to avoid experiences that might inhibit such development.

Furthermore, in the light of the importance that has recently been attributed to the development of the creative potential of children, it is suggested that knowledge of the type pursued by this study might well prove useful to the

teacher of young children in her efforts to facilitate the healthy development of the creative thinking powers of her students.

VI. DEFINITION OF TERMS

For the purposes of this study and report, the following meanings shall be attached to the specified terms:

Real phenomena. Those phenomena that are commonly perceived by adults to have existence or actuality in a naturalistic, physical world.

Unreal phenomena. Those phenomena that are commonly perceived by adults to have existence only in the fancy.

Parental cueing.

(1) Direct cueing: Parental behavior that indicates a logical, true, and/or scientific response to children's queries and concerns regarding the reality or unreality of phenomena.

(2) No cueing: Parental behavior that indicates an attitude of indifference or failure to assist the child to recognize or identify real and unreal phenomena.

(3) Miscueing: Parental behavior that indicates
(a) reinforcement of incorrect classification, and/or
(b) intent to deceive.

Cumulative schooling. Total number of months that a child has been in attendance at a preschool institution (nursery school or kindergarten) regardless of the length of the instructional period in hours or the number of days in the month that instruction is offered.

VII. OUTLINE OF THE REPORT

The foregoing chapter has discussed the problem and presented the reader with an overview of the investigation. A review of research and theory related to the problem will be contained in Chapter II. Chapter III will describe in detail the design of the study and the statistical procedures used. The results of the study, including an analysis and interpretation of the data, will be presented in Chapter IV. Chapter V will consist of a summary of the investigation, conclusions, implications, and suggestions for further study.

CHAPTER II

A REVIEW OF RELATED THEORY AND RESEARCH

The young child's ability to identify fanciful phenomena as such has received relatively little attention in the research literature. Werner has concerned himself directly with this topic and there are frequent references in Navarra's case study material to the young child's struggle to determine what is credible and what is non-credible information about his surrounding world.

In addition to an acquaintance with the literature directly related to the topic of this study, it is felt that, in order to interpret the results of this research, it is necessary to have a knowledge of the theory and research pertaining to (1) the nature and early developmental characteristics of the child's thought processes, (2) the characteristics of perception in the young child, and (3) certain associated aspects of scientific thinking in the young child. Therefore, a selected, abbreviated account of the theory and research findings related to these three topics will also be presented in this chapter.

I. THE NATURE AND EARLY DEVELOPMENTAL CHARACTERISTICS OF THE YOUNG CHILD'S THOUGHT PROCESSES

The developmental theory of Jean Piaget is considered to be the most comprehensive theory of intellectual

development to date. In his theory of cognitive development, Piaget (1952) begins with the idea that intellectual behavior is always involved in a person's adaptation to his environment. This adaptation results from the interaction of two processes, assimilation and accommodation. Mussen, Conger and Kagan (1963) interpret Piaget's processes in this way:

Assimilation refers to the fact that the child relates what he perceives to existing knowledge and understanding. In assimilation, the individual tries to retain his present comprehension of the world intact, even if new perceptions or new knowledge must be distorted in order to fit neatly into his existing view of the world Accommodation is the reverse of assimilation. In accommodation the child adjusts his conceptual understanding to fit new perceptions. That is, the stimulus is subject to minimal distortion, for the person uses his reference system so that it is congruent with external reality. (pp. 252-253)

These two processes are said by Piaget to be present in all perceptual experiences and intelligent behavior.

According to Piaget (1952; Flavell, 1963), logical thinking in any sustained form does not occur in the young child until he reaches the age of seven or eight years. Piaget (1952) has postulated four major stages in the cognitive development of the child and it is the second of these stages (two years through seven or eight years of age) upon which attention in this report will primarily be focussed.

Piaget terms the first period in the development of adaptive behavior the sensori-motor stage (birth through approximately two years). During this period the human

being changes from an organism capable only of reflex actions to an individual capable of internalized thoughts. Thus at the close of this period, the child is enabled to respond to or think about phenomena outside of his present, observable environment.*

The next stage of thought (two years through seven years) is termed the preoperational period and is divided into two substages: the preconceptual (age two through age four) and the intuitive (age four through age seven). The building up of representational activity and the differentiating of image and language from action and reality are characteristic of the first substage. The child appears to be relearning or re-working on a representational level all that was performed at the sensori-motor level. However, thought at this level is qualitatively quite different from later operational thought. The preconceptual child is characterized by egocentric thought. He is unable to see his own viewpoint as one of many possible viewpoints or coordinate his viewpoint with other viewpoints. Thus he feels no need to justify his reasonings to others or to look for contradictions in his reasonings. Piaget says that although the child thinks, he is unable to think about his own

*For a more detailed coverage, the reader is referred to John H. Flavell, The Developmental Psychology of Jean Piaget (Princeton, New Jersey: D. Van Nostrand Company, Inc., 1963) pp. 85-156.

thinking and his thought is said to be irreversible. The tendency to center or focus attention on one dominating aspect of a stimulus to the exclusion of other attributes characterizes the child's perception and his reasoning. Thus the child encounters great difficulty with transformations because he tends to focus on successive states. Reasoning from particular to particular (transductive reasoning) is also characteristic of this stage. This transductive reasoning is characterized by juxtaposition or mere associations between terms rather than implicative or causal relations. The child at this level possesses something midway between the concept of an object and that of a class. These notions or precepts of participations are imaginistic, concrete, and action-ridden. Because the young child thinks in absolutes and centers on one factor he cannot consider the relationship of two classes or the relationship of the subclass to the whole class or of parts to the whole. He thinks of parts as independent of one another and independent of the whole. When he considers the whole, he cannot distinguish its parts. (Boehm, 1964, p. 96) Lovell (1968) says that Piaget's child is at the first level of abstraction or dissociation, for he dissociates objects and their properties on the basis of their behavior; e.g. the knife that cuts bread from the knife that cuts apples. Assimilation and accommodation are, at this level, in a

state of unstable equilibrium and, according to Flavell (1963), the child's cognitive life tends to be unstable, discontinuous, and a moment-to-moment existence. (p. 158)

As the child passes his fourth birthday, he enters the second substage, intuitive thought. He now becomes better able, according to Piaget, to set himself a task, adapt his intelligence to it, and commence to reason about more difficult problems. (Lovell, 1968) Toward the end of this period the child gradually becomes able to decenter although the decentering process is fragmentary and semi-reversible at first. The child supplements incomplete operations with a semi-symbolic form of thought, i.e. intuitive reasoning and judgments are controlled by means of intuitive "regulations" (partial and momentary compensations) which are analogous to perceptual adjustments on the sensorimotor plane. In the later phases of the preoperational period, the rigid, static, and irreversible thought structures of the early preoperational child become more plastic, flexible, consistent, and enduring and the processes of assimilation and accommodation function more or less in equilibrium or balance.

The preoperational stage is followed by the concrete operational stage (ages seven through eleven years, approximately). The child at this age is capable of thinking about problems without being fooled by the perceptually salient

aspects of objects or without requiring concrete objects to help him reason. Moreover, adult logic is increasingly applied to problems. He is able to classify, seriate, and can grasp the concept of natural number. The child at this age can distinguish between his experiences and the order that he imposes on these experiences. According to Lovell (1968), the child has reached the second level of abstraction or dissociation. Notions built at this second level of abstraction are termed concepts, according to Lovell.

Piaget sees biological factors, autoregulating factors, socialization factors, educational, and cultural factors as being major influences upon intellectual growth.

The theory of Heinz Werner (1943) regarding the structure of child thought bears some similarity to Piaget's descriptions. Werner posits a fusion of the affective, perceptual, cognitive, sensory and motor systems in the infant. Thus there is little differentiation, initially, of object and subject, of perception and pure feeling, of idea and action, and so forth. (p. 29) Later the child gradually separates feeling, perception, and activity. Werner describes child thought as being syncretic. He describes the relationships posed by the child as (1) "fashioned to accord with an egocentric standpoint and all its interests and thus pinned down to the level of concrete perception and action"; (2) "diffuse and concrete, that is, they always refer to a

concrete situation in which they are firmly, if not clearly, embedded"; and (3) "characterized by a so-called one-sidedness (one-track relationship)." (pp. 312-313) Werner says that because the young child's concepts are cast upon one or few salient properties rather than in the form of a synthesis of properties, the child does not think comprehensively of the many possibilities of relationships between concepts, but chooses perhaps one out of many upon which to concentrate to the neglect of all others. He is unable to grasp simultaneously different aspects of a relationship. Also, according to Werner, the child's diffuse, concrete mode of thought occasions a lack of consistency and a consequent lability in the relationships posited. This means that the salient characteristics which are stressed at one time in the construction of a relationship may be replaced by others at another time. Thus, not only do the child's relationships appear to be frequently indeterminate or vague from a logical point of view but the child frequently evinces inconstancy in his verbally expressed relationships. The verbalized inference itself appears at first as a concrete form of thought and is transductive in nature. Thus, according to Werner, the child's methods of inference are syncretic, concrete, diffuse-global, and poorly centralized according to focal elements.

II. CHARACTERISTICS OF PERCEPTION IN THE YOUNG CHILD

The information presented in the foregoing section has indicated (a) the importance of the role played by perception in the preoperational child's acquisition of knowledge of his environment, and (b) some of the limitations of the young child's perceptual processes. This section will include a discussion of the cognitive and affective aspects of perceptual development in the young child.

Cognitive aspects of perception. Although there is much controversy in the literature regarding the relationship of perception to thought,* for the purposes of this review, only the developmental relationship of these processes as they function in the child's acquisition of an understanding of his environment will receive attention.

M.D. Vernon (1966), an expert in the field of perception, states

. . . percepts, after the first few months of life, do not exist in isolation, but are related across sensory modes; they are integrated with memories of previous similar perceptual experiences and of reactions to these, into schematic categories of associated percepts. The categories are further refined and restructured through the development of relevant ideas by intelligent reasoning. (p. 404)

*For a detailed analysis of this argument, the reader is referred to William Kessen and Clementina Kuhlman (eds.) Thought in the Young Child, Monograph: The Society for Research in Child Development (27:2 Serial No. 83, 1962).

Thus, according to Vernon (1957),

As the child matures, perceptual activity is performed with a greater degree of intelligence; and the perceptual schemata built up are reinforced and modified by intelligent thinking. Thus as soon as the child ceases to accept the sensory data passively . . . he begins to make inferences as he actively directs his observations from one aspect of the environment to another, analysing and comparing what he perceives. At each stage, perceptual data are recorded and organized in schemata, which in turn direct subsequent perceptual activities, until the schemata are themselves modified or even discarded. Finally the developing intelligence will intervene whenever the inferences based upon the schemata are found unsatisfactory, and the individual will try to base his judgments on reason. (p. 44)

On this subject, Solley and Murphy (1960) say

. . . Perceptual responses involve memories and judgments, lead on into thought and imagination; and the latter influence subsequent perception. (p. 327)

Vernon thus emphasizes the importance of the cognitive aspects of perception, of the parts played by thought and reasoning in building up an understanding of the world, and of the functions of a background of knowledge in determining immediate percepts. (1955, p. 180)

From a consideration of the literature on perceptual development, Vernon (1966) concludes that there appear to be two main characteristics of perception in infancy and early childhood. Firstly, and this is a point which has been alluded to previously in this chapter, perception at an early age is vague, global, and diffuse. Young children do not perceive detail accurately and often perceive what seems to adults to be the irrelevant aspects of a stimulus. They fail

to isolate parts within the whole and objects from their surroundings. Solley (1966) says, in relation to this point, that the child's perception of one event is dependent upon his perception of other events. Solley also adds that the young child's perceptual world is extremely labile, i.e. susceptible to change. (pp. 286-287) With increasing age, according to Vernon, children are better able to analyze and differentiate aspects of perceptual material thus enabling them to reorganize such percepts in such a manner as to select and emphasize the relevant aspects of the situation and to ignore the unimportant attributes. This ability to differentiate and reorganize undoubtedly depends in part on the cognitive structuring of experience, and the ability to think out what is important and what is irrelevant. Secondly, the young child is relatively unable to make inferences from his perceptions of phenomena because he lacks the knowledge to guide him. Vernon (1966) believes the foregoing two characteristics are related. She says

. . . there is a close relationship between the inability to perceive accurately and discriminatively and to direct attention appropriately (as suggested by Piaget), on the one hand, and the partial and incomplete knowledge which the child has obtained of his environment on the other hand. Thus it may be that inability to direct attention appropriately to the significant features of the environment is caused at least in part by an incapacity to understand the nature of the situation and to perceive its significant features. (p. 393)

Following the acquisition of language, the child's

perceptions and memories, according to Vernon, are supplemented and to some extent superceded by the development of concepts. However, Vernon cautions, the child's concepts do not emerge complete and well-developed. Citing evidence from other studies (Reichard et al, and Vurpillot and Brault), Vernon concludes that children do not classify by means of abstract generalization until eight or nine years of age. Rather, she goes on to say, the function and use of objects along with the subject's attention to single identifying cues characterize young children's classifications. Hence the categories that young children construct may be quite illogical and unsystematic from the adult point of view.

Affective aspects of perception. Solley (1966), basing his thinking largely upon Werner's concept of the "syncretic" functioning of the youngster, states that there is yet another characteristic of the young child's perceptual world--it is "indelibly" blended with his affective world. (p. 300) During this time the child is said to perceive autistically, i.e. perception is organized around wish fulfillment. The young child, according to Solley (1966), ". . . selectively hears and sees what he wants to hear and see, and can perceive, at times, the exact opposite of what did occur." (p. 285) Piaget and Werner contend that lack of awareness of distorting reality is characteristic of autism in children. Later, according to Vernon, there is a decrease

in autistic perception as the affective, perceptual, and sensory-motor systems gradually become differentiated although possibly some aspects of wishes, desires, and feelings cling to the perceptual system of adults.

Piaget (1930) has also contributed much to the knowledge of autism. He emphasizes the cruciality of the child's development of awareness of the self in the outgrowing of autistic perception. According to Piaget

. . . magic and autism are two different sides of the one and same phenomenon--that confusion between the self and the world which destroys both logical truth and objective existence. (p. 303)

Piaget believes that the motivation of social pressure, causes the gradual emergence of veridical perception from autistic cognition during the concrete operational period.

From a review of the theoretical literature regarding the developmental aspects of autism, Solley and Murphy (1960) present the following synthesis:

In the early stages of development there is little discrimination between subjective and objective factors. Elementary "meanings" are formed which are based on primitive forms of acceptance and rejection, and on simple schemata. As the child matures, there is a gradual differentiation of subjective factors such as wishes, needs, and images and objective factors such as the demands of stimuli. Sometimes the perception of reality is distorted by strong affect which has been cathected to earlier memories which produces biases in expectancies and attention. With maturation, outer determinants acquire more and more dominance as "causal" factors in perception; but the earlier, autistic percepts always form a basis from which the more realistic percepts derive. (p. 76)

Closely related to the concept of autism is the strong relationship that exists between motivation and perception. Solley and Haigh had eight children from five through seven years draw a picture of Santa Claus once every week during the month before Christmas and twice afterwards. They found that the closer to Christmas, (increased motivation) the larger and more elaborated were the Santas. Also Santa's bag full of toys became more pronounced and he was sometimes drawn close to a house. After Christmas, the Santas decreased in size and detail. They concluded that with increased motivation there is a corresponding increase in perceived form. (1966, p. 288) Solley cites a similar study by Ballin in 1961 who used a different approach but whose results corroborate those of Solley and Haigh's. Abram, in 1960, tested six-year-old and nine-year-old children's perception of the Easter Bunny by using the Solley and Haigh method. He found that it was the eggs rather than the Bunny that increased in size and detail. The older children showed less affect than did the younger ones. Also, cited by Solley, is a study by Craddick in 1962 who had children (no ages given) draw pictures of witches before, on, and after Hallowe'en. He found that the size of the witches on Hallowe'en day was much smaller. Craddick felt that this was indicative of a "perceptual shove" or an attempt to push frightening things away. Bruner and Goodman (1947) had rich

and poor children estimate the size of coins. They found that poor children tended to overestimate the size more than the rich children. In an experiment conducted by Solley, Haigh, and Sommer (1957) it was found that children perceive a rewarded face as compared with a non-rewarded face as happier, brighter, more defined (having a darker line drawn around it), and nearer to them. Thus it would seem that reward stimuli are perceptually more visible, closer, and thus larger than non-reward stimuli.

In respect to the 'figure-ground' concept in perception, the above studies would seem to support the contention that motives, rewards, and punishments influence what is perceived by the child as figural. In respect to ground, Solley (1966), referring to the findings of Witkin (1954) that children have difficulty perceiving things out of their usual contexts, suggests that affect may function somewhat like a perceptual ground for percepts and that to the extent that ground influences or determines what is figural, the child's perceived world is structured about wishes, desires, feelings, and emotions. (pp. 295-296)

III. RELATED ASPECTS OF SCIENTIFIC THINKING IN THE YOUNG CHILD

Lovell (1966) points out that in Piaget's view, the young child is at one and the same time developing an

outward adaptation to reality as well as building up an inner psychic organization that parallels, to some extent, that external reality. (p. 408) Thus it would seem that the development of scientific concepts and thinking is an integral part of the cognitive life of the developing child. The literature reviewed in this section will be confined to (1) the young child's notions of natural phenomena and causality, (2) his spheres of reality and his notions of real and unreal phenomena.

The young child's notions of natural phenomena and causality. Piaget (1963) has discerned the following three constant tendencies in the child's ideas of his surrounding world. Realism, as defined by Piaget, is "a sort of confusion between the inner and outer, or the tendency to fix in objects something which is the result of the activity of the thinking subject." (p. 241) The child tends to see psychological events or products such as thoughts, dreams, and names, as physicalistic, thing-like entities. (Flavell, p. 281) Animism, according to Piaget, is the tendency to endow objects with life and consciousness. Things are seen to move, act, and react in terms of their own built-in thoughts, purposes, feelings, moral judgment, volition, and power of spontaneous movement and change. (Baldwin, 1955, p. 320) Artificialism, the third thinking tendency of young children according to Piaget, posits the explicit action of

maker at the origin of things. The child assumes that "all events are to be explained by the action of some humanlike agent or entity or force which wills things to happen in fulfillment of some purpose of its own." (Baldwin, 1955, p. 321)

Realism, animism, and artificialism are said by Piaget to spring from a basic lack of differentiation between the self and the world and this lack of differentiation in turn results from the child's uniperspective egocentrism. (Flavell, pp. 280-281) Werner suggests that, because of the initial fusion of the systems in the infant, there is thus a high degree of unity of object and subject. In turn, this unity results in a dynamic apprehension of things and such "dynamization" may lead to an animistic perception of things. (1948, pp. 67-69)

Piaget emphasizes the parallelism between the evolution of cause-effect thinking and the child's general mental development upon which he believes this evolution depends. (Flavell, 1963, pp. 289-290) From his study of children's explanations of such phenomena as wind, air, different kinds of movement, and the mechanisms of simple machines, Piaget (1930) has postulated four main developmental stages and seventeen distinct modes of explanation*

*For a discussion of the various modes of explanation, the reader is referred to Jean Piaget, The Child's Conception of Physical Causality. London: Kegan, 1930.

in the evolution of cause-effect thinking. The first two stages, according to Piaget, are "teeming with subjective elements" and are termed precausal (includes all forms of explanations that are a result of the confusion between psychological activity and physical mechanism). The third stage which appears at about age seven or eight is more truly causal. These stages are closely linked with the child's progress from realism to objectivity, and from ego-centrism to socialization.

Church (1961, pp. 15-20), in a discussion related to Piaget's characteristics of the child's causal thinking, suggests that, as a result of the realism tendency, children fail to doubt the reality of whatever comes into awareness. Of realism, Church says,

It refers to the fact that initially all things are equally real and real in the same sense and on the same plane: pictures, words, people, things, energies, dreams, feelings--all are equally solid or insubstantial and all mingle in a common sphere of experience. (pp. 15-16)

He goes on to say,

Realism is closely allied to phenomenalism, or accepting things as given, without inquiring beneath the surface or looking for influences outside the local event. (p. 16)

Church adds that many of the child's first causal explanations are phenomenalist--for example, "The thunder makes it rain."

Another aspect of children's causal thinking,

according to Church, is dynamism. Dynamism is revealed in the child's absence of curiosity about causal connections. Also, he states,

Dynamism sometimes becomes explicit, as in the Hopi cosmology, or in animism (attributing animal, particularly psychological, characteristics to inanimate objects), anthropomorphism (attributing human qualities to infrahuman creatures . . .), magicalism (attributing to human or other agencies the power to act upon reality via energies transcending those accepted by science), and spiritualism (belief in supernatural entities). (p. 18)

Thus, according to Church, in the "realistic" world of the child "where images and feelings have the same status as objects, their interaction can only be dynamistic.

Phenomenalistic explanations make sense because implicit dynamic forces fill in the logical gaps and obviate inquiry beneath the surface." (pp. 18-19) Baldwin (1955) suggests that it is this dynamistic outlook which "permits the creation of the phantoms and hobgoblins." (p 323)

Piaget's formulations regarding the pre-causal thinking of young children have sparked much controversy in the field and have led to subsequent investigations by others. Although not all of the research appears to substantiate Piaget's reports of the development of cause-effect thinking, the variety of methods employed by researchers makes the comparison of results difficult.

Susan Isaacs (1930), one of Piaget's earliest critics, found little evidence of Piagetian precausality in the every-

day behavior of the children at the Malting House school. She cautioned that the child's ignorance and his belief should not be confused--"The child doesn't believe, for example, that 'everything is alive'; he simply doesn't know that everything isn't alive." (p. 108) Isaacs emphasized the role of intelligence and experience in the development of the child's ability to interpret critically the phenomena surrounding him. Hazlitt (1930) found that children could see causal relationships at a very early age. According to Hazlitt, lack of experience and knowledge accounts for the difference between children's concepts and those of adults. King (1960) reports that Johnson and Josey in 1931 repeated Piaget's experiments and found that, by six years of age, their subjects were capable of adopting hypotheses and evidenced no egocentrism. (p. 2)

Wallace (1965) notes that Keen, Deutsche and Huang all encountered difficulty in attempting to classify children's explanations in Piaget's categories. Keen found no evidence of consistent stages of cause-effect development. She notes that Piaget obtained most of his mystical explanations in reply to questions about the stars, wind, and other phenomena with which children have no direct contact or experience in the sense that they have with wheels, plants and so forth. (p. 133) Wallace reports that Deutsche and McAndrew reported very little evidence of Piaget's precausal types of thinking.

Deutsche (1937) found that the nature of the specific question more accurately determines the kind of response made by a child than does his general level of causal thinking, chronological age, or level of intelligence.

Huang (1943), in summarizing his own studies and several others up to that date, concluded that (1) naturalistic and phenomenalist thinking coexist in the mind of the child, and (2) the kinds of ideas characteristic of the everyday conceptions of reality and causality may be simple, naive, and incorrect, but they are physical, naturalistic, and of the "same warp and woof as the 'physical' conceptions of the everyday man in the street." (p. 109)

In the more recent studies there has been a more deliberate effort to consider some of the variables which influence the development of causality. Oakes (1947) found that both precausal and naturalistic responses occurred at all age, mental ability, and grade levels. He found, that in general, understanding of essential relationships increased with age but no definite stages were characteristic of his sample. He suggested that the more "physicalistic" or naturalistic responses are characteristic of brighter children. Nass (1956) studied two groups of children matched as to sex, chronological age, and IQ but rated as 'emotionally disturbed' and 'emotionally adjusted' respectively. He agreed with Piaget that much of children's

causal thinking even up to eight to ten years of age is prelogical. He stressed that scores were affected by personality, the wording of the questions, and the subject matter involved. Honkavaara found that children from five to eight years were more likely to attribute life to objects towards which they had a positive affective tie. (Wallace, 1965) Mogar (1960), using a slightly different approach to investigate Piaget's postulates, confirmed Piaget's age differences in levels of explanation. She noted that there are two developmental factors which contribute to this variance: (1) the increase with age of verbal skills, and (2) the accumulation with age of more learning experiences, both formal and informal. King (1960) found no evidence of the existence of stages in causal thinking. He noted that experience in and out of school, the increase of vocabulary with age, and the form of the question were influencing variables. Elitcher (1967) found that cognitive style is not related to the quality of causal thinking. Ezer (1962) found that animistic and/or anthropomorphic responses were found more frequently among children from more religiously devout homes than from less devout homes.

Laurendeau and Pinard (1962) employed Piagetian tests with Canadian children (four through twelve years of age). They concluded that the development of the child's causal thinking consists of a progressive substitution of

physicalistic interpretations for primitive (precausal) beliefs. They further concluded that the transition from precausality to causality always involves an intermediate phase during which the two types of thinking intermingle. They found evidence of the persistence or lingering of realism up to six and one half years of age, animism up to eleven or twelve years, and artificialism up to nine years of age. In relation to Laurendeau and Pinard's findings, Lovell (1964) notes:

The lack of synchronism as between the disappearance of the different forms of precausal or illogical thinking suggests a lack of systematization in the child's thinking. He has, even during the junior school years, no theory of the external world and the concepts he develops are not well organized. (p. 107)

Although no definite conclusions can be drawn regarding Piaget's stage theory of cause-effect development, there seems to be some evidence to substantiate the following observations.

1. Young children frequently employ both precausal and more truly causal explanations depending upon the nature of the phenomena (i.e. depending upon their opportunity for direct experience with the phenomenon in question or the affect relevancy of the phenomenon to the child), and the wording of the question. (Isaacs, Keen, Deutsche, Nass, Honkavaara, Mogar, and King)

2. There is an increase in quality of causal thinking with age.

Although attention has been directed somewhat to other variables which might influence this ability, no definite conclusions can as yet be drawn. McAndrew and Oakes reported that scores increased with intelligence but Deutsche found that such correlations were not above the level of chance. Deutsche and Huang both reported that causal thinking was not related to socio-economic level of the child. McAndrew reported that boys surpassed girls (three through six year olds) in the percentage of logical responses given but Deutsche found that such correlations were not statistically significant.

The child's spheres of reality and his notions of real and unreal phenomena. The hypothesis that lack of differentiation is characteristic of the child's early world has been developed earlier in this chapter. Werner further developed the idea that the young child does not differentiate single spheres of reality. Just as the child does not differentiate the dream world from the waking world, or the play world from the everyday world of reality, he does not, according to Werner, differentiate the world of a "fictitious poetic reality" from the reality of everyday life. Werner states,

At first the consciousness of fiction, of the artificially produced, is alien to his (the child's) mentality. In this event, . . . an intermediate reality is built up, in so far as the fiction is thought of as being true, yet true in a different sense than everyday things and happenings. (1943, p. 394)

To illustrate the child's construction of an intermediate reality, Werner quotes an observation recorded in 1910 by Scupin* of a six and a half year old boy.

Although the concept of fairy tale has been repeatedly explained to him, he still believes that there is a far-off fairyland, where one can get to only after travelling many days and many nights on the train. And now if something a little unusual is told to him he asks doubtfully: 'Is that just in fairyland or is it really where we are?' The child is at a stage where he tries very hard to distinguish between the real and the fictitious. (pp. 394-395)

Werner reports that as a result of a survey made by himself and Muchow (about 1910) of one hundred and fifty Hamburg children, it was concluded that it is usually between six and eight years of age that the child acquires a clear consciousness "of the fictitious and artificial, of a purely phantom reality." (p. 395) Once again Werner quotes an observation of Scupin's seven year old child to illustrate this finding.

If he tells something that appears improbable to us, he breaks off short with a look of astonishment, and explains: 'That wasn't really so; I just made it up out of my head!' In other words, an increasingly strict distinction is arising between reality and fantasy, between the actually experienced and the imagined. (Ibid.)

*The original work by Scupin was unavailable to the author of this report.

Thus, according to Werner, the following three phases seem to characterize the child's progression in his ability to separate the sphere of fantasy from the sphere of reality:

1. No distinction is made between the reality of fantasy and the reality of the real world.
2. An intermediate stage occurs when the child posits a sphere of reality removed from his 'here and now' reality where such fanciful things really do exist.
3. The child comes to realize the difference between that which can be actually experienced in the world of physical reality and that which is a product of human imagination.

Navarra (1955), in his record of the development of scientific concepts in a preschool child from age three to just over five, noted that observation and experience appear to be powerful determinants for the child (L.B.)* of credible information and credible sources of information. Navarra reports that initially the child tended to accept literally the phenomena of his surrounding world but as his background of experience and information increased he was able to note that some phenomena were not consistent with

*It should be noted at this point that L.B. was "high average" in ability and functioned in what might be referred to as a "responsive" environment.

this repertory of experiences. Such inconsistencies were questioned by the child--for example, while looking at the clouds, L.B. asked, "Why do clouds have faces in the books?" (p. 102) Such experiences, according to Navarra, caused the child to doubt the credibility of stories and thus fairy tales were soon assigned to the realm of non-credible information. In this regard, Navarra cites an incident in which the mother had commented, after reading the story of Eddy Elephant to the child, "Can you imagine an elephant riding a bike!" L.B. replied, "Well, he can! Cause this is only a fairy tale." (p. 104) It appears that the child understood that this was not an event that could occur in the real world but was quite possible within the context of a fairy tale. Navarra does not elaborate sufficiently on this point to enable the reader to draw any conclusions as to whether the child believed there was a "far-off" fairyland where such events occur as Scupin's child believed, or whether he recognized such an event as the product of someone's imagination.

In respect to the child's encounters with misleading phenomena, Navarra refers to a recording concerning the television viewing by the subject of a comedian whose head was being twisted (screwed on). The child was intrigued by this phenomenon and Navarra describes the reaction in this way.

The visual confirmation was significant in his estimation, and this event was placed in the realm of something that happened but that he couldn't do. (p. 103)

In a further incident that illustrates the child's attempts to deal with discrepancies of this type, the subject observed a magician turn a 'fake' (not real) rabbit into a real, live rabbit. Initially the child labelled this event 'magic'. Magic was applied to those events that L.B. had witnessed as having occurred but for which he had no explanation which he considered reasonable. Furthermore, because such an event was discrepant in terms of his experience, he regarded such magic as highly incredible. In his concern for the incomprehensibility of this event, the child at this point then questioned the validity of his own observations--"Could he do that?" From that point on, according to Navarra, L.B. accepted his observations of the reality of the events and became engaged in a search for a logical explanation of such an event. The child indicated that he suspected there were relationships present that he had not witnessed and he came to regard magic as a trick. In a like manner when the subject had witnessed a rabbit transformed into a mouse in a magical act, he described the event as magical because "rabbits can't be mice." (p. 107) Navarra explains that the child had formed a generalization--an animal is what he is and can't be something different--and that this generalization formed a basis upon which the child

could determine the credibility of certain phenomena like the forementioned. As an example of the application of this generalization to a different event, Navarra reports the child's first encounter with the information that caterpillars change into butterflies. L.B., who had never witnessed metamorphosis, responded with the idea that this was silly "cause caterpillars can't turn into butterflies." (p. 108) Initially, the credibility of this information was based upon the assurance of his parents that such things actually do happen. Even though the child accepted the veracity of his parents' statements and opinions, it took a long time, according to Navarra, for the child to integrate this information. (p. 109)

Information received via television and radio came to be regarded by the child as highly suspect and in need of verification. Navarra refers to an occasion when the subject was listening to a news report about an earthquake. This event was quickly dismissed by L.B. as a "story" and when the parents questioned the remark, the child replied, "Cause that happened to Aladdin and that's a fairy tale." (p. 109) Thus the context of the event, according to Navarra, was not credible for the child. Once again the information was accepted by the subject on the basis of his parents' endorsement.

The sensitization resulting from the child coming to

question his own observations and from new information which was contradictory to established conceptions, played an important role, according to Navarra, in the growth of the child's ability to determine the credibility of information.* This sensitization also led to the questioning of events that had previously been accepted as true.

Throughout Navarra's records it seems apparent that information received from others is not as easily or as quickly integrated as information acquired through personal experience. It is also to be noted that although L.B. accepts his parents as credible sources of information he does at times, as indicated in other recordings, initially question the veracity of their statements. However, it would seem that the remarks made by the child's parents and by other people whom he trusts are most influential in re-orienting his perception and thinking.

The credulity of preschool children is emphasized by Blonsky (1964). He states that young children, because of their very nature, easily accept without question what they hear and will listen credulously to fabrications. In this respect Ausubel and Schiff (1954) found that the younger the child, the more easily he accepted an explanation based on a

*There seems to be a close relationship between the manner in which L.B.'s thinking evolved and the description given by Vernon (pp. 20-21 of this chapter) of the function of perception in recognition.

false principle of causality.

IV. RELATION OF THEORY AND RESEARCH TO THE STUDY

It can be surmised, on the basis of the literature reviewed in this chapter, that the ability to determine what is real and unreal is a rather complex cognitive ability that appears to be related rather closely to the development of the child's thought and perceptual processes. In addition, it seems reasonable to assume that the child's notions of natural phenomena and causality are in some way connected with his ideas of the reality or unreality of phenomena. Thus some of the variables which have been considered in studies of causality are also considered in this study.

Although nothing definite can be concluded from the small amount of research available on the development of the young child's ability to determine what is real and what is unreal, the work of Werner and Navarra provides at least a starting point for the comparison and interpretation of the findings of this study. Also, it would seem that the acquisition of some practical knowledge regarding "what" children view as real or unreal will provide a base for further hypotheses concerning the "how" and the "why" of their classifications.

V. SUMMARY

This chapter has presented a review of the theory and research both directly and indirectly related to the development of the young child's ability to identify the reality or unreality of phenomena of a fanciful and misleading nature. The literature was reviewed in respect to (1) the nature and developmental characteristics of the young child's thought processes, (2) characteristics of perception in the young child, and (3) selected aspects of the child's scientific thinking. Following the review, the relationship of the theory and research to the present study was outlined.

CHAPTER III

THE PLAN OF THE STUDY

An explanation of the selection of the sample, a description of the data gathering instruments, and a discussion of the statistical procedures used to analyze and interpret the results of the study will be presented in this chapter.

I. THE SAMPLE

The sample was comprised of seventy-two preschool subjects from the city of Edmonton, Canada, and was selected in the following manner. A list of registered private kindergartens operating within the city was obtained from the Government of Alberta Department of Education and a similar list of nursery schools from the Government of Alberta Department of Public Welfare. In consultation with representatives from the two departments, the lists were revised to include only those preschool institutions that (1) levied a fee, (2) were taught by certified teachers, and (3) were deemed to be located in middle or upper socio-economic areas. Thus it was assumed that the children in attendance at these institutions represented middle or upper socio-economic levels. From these revised lists, six kindergartens and six nursery schools were randomly chosen. The teachers of these

twelve selected preschools were then contacted personally in order to solicit their cooperation and assent to involve their students in the study. Each teacher then submitted to the investigator a class list containing information regarding each child's age, birthdate, sex, address, and telephone number. These children's names were then sorted into three categories on the basis of chronological age. One category consisted of the names of the children from three years through four years, five months; a second category consisted of children from four years, six months through five years, five months; and a third category contained an age group from five years, six months through six years, five months. Then each of the three categories was further partitioned on the basis of sex which yielded a total of six groups. Twelve subjects were then randomly selected from each of the six groups. Thus the final sample consisted of seventy-two subjects, twelve boys and twelve girls at each age level.

II. THE INSTRUMENTS

Three instruments were used in the collection of data for the study. Each instrument will be described in this section.

The Real-Unreal Distinctions Test. This instrument, which was designed by the investigator for the purposes of this investigation, was devised in the following manner.

A bank of potential test items was compiled from the areas of (1) children's literature (stories, poems, nursery rhymes), (2) children's television programs, (3) children's folk lore (beliefs and customs associated with such events as Hallowe'en, loss of teeth, and so forth), and (4) unusual and misleading events from the field of science. Only items which were deemed to be within the experience repertoire of most middle class children were included in this bank.

Following a preliminary try-out of various combinations of the items with six preschoolers, twenty items which seemed to be well understood and within the experiences of these children were selected to comprise the test for the purposes of a pilot study. Originally the test was designed to consist of two parts: the identification of the phenomena as real or unreal and the reason for the classification.

Following the pilot study with twelve children, it was decided that for the purposes of scoring, the test would be restricted to fifteen items and to the classification of phenomena only. Test length and the inability of many of the pilot subjects, especially the younger ones, to formulate a reason without being 'pushed' were the main reasons for shortening the test. It was decided to retain the 'why' or 'how is it' question as a matter of interest and as a possible check on the classifications of the phenomena. The pilot study also provided an opportunity for the investigator

to check the effect of alternate question forms. The question form which seemed to be most easily understood by the pilot subjects was incorporated in the final draft of the test. The following three items were included in the measure but were not scored.

- a) Would it be possible for you to ever meet or talk to a clown? How could you do that? (or) Why not?
- b) (Show the subject two big balloons of the same size and color, one filled with ordinary air, the other with helium.) These balloons look exactly alike don't they? Watch them carefully as I let go of them. Why didn't they do the same thing?
- c) (Place a box with one end open on the table in front of the subject. Place some tacks, paper clips, and other small metal objects on the top of the box.) Can these things move by themselves? How can they do that? or Why not? (If the response is "no", manipulate the objects from within the box by means of a small magnet.) How is it that they can move now?

Item (a) was inserted after item nine in the test for the purpose of breaking any set or pattern in the responses. Items (b) and (c) regarding causality were inserted at the end of the test to be available as a check on response consistency, to provide a source for further hypotheses, and

to add variety to the testing situation.

The following is a copy of the Real-Unreal Distinctions
Test.

REAL-UNREAL DISTINCTIONS TEST

Questions 1-4: (Show the subject the colored picture of the nursery rhyme, Hey Diddle Diddle.)



Let's look at the different things in this picture.
Do you think all of these things could really happen?
Let's look at the cow--could a real cow do this? How
is she able to do that? (or) Why couldn't she do that?

(indicate the cat) Could this really happen? How could a cat do that? (or) Why couldn't a cat do that? (Indicate the dish and spoon) Could a dish and spoon do this? How could they do that? (or) Why can't they do that? (Indicate the dog) Could a dog do this? How could he do that? (or) Why couldn't he do that?

Question 5: Do you ever watch the Flying Nun on TV? If she were here with us in this room, do you think she could fly? How is she able to fly? (or) Why wouldn't she be able to fly if she were here?

Question 6: Are there really ghosts? How do you know there are (aren't) ghosts around?

Question 7: Do you remember the colored leaves of last fall?

There is a story about a little fellow called Jack Frost and this story says that Jack Frost goes around on cold nights with a pot of paint and paints the leaves pretty colors. Do you think this is how the leaves really become colored in the fall? Why do (don't) you believe that story?

Question 8: Do you think there are fairies? How do you know there are (aren't) fairies around?

Question 9: (Show the subject a picture of the stages of the life cycle of a frog.) It is said that frogs lay eggs (indicate) and that these little things with tails (indicate) hatch from the eggs. Then these

little things are said to grow into frogs (indicate).
Do you think this could really happen? How do you
think that could happen? (or) Why do you think that
couldn't happen?



Question 10: Do you know the story of the Sleeping Beauty?

Remember how she pricked her finger and fell asleep?
She slept a long time--a hundred years. That's a lot
longer than you have been living or that even your
grandpa or grandma have lived. Do you think a person
could sleep a hundred years and then wake up and be
just like she was before she went to sleep? How could
that happen? (or) Why couldn't that happen?

Question 11: Do you think there are really giants? How do
you know there are (aren't) any giants around?

Question 12: (Show subject a tiny seedling in a little pot.



) This is a very little plant, isn't it?

Plants need water to grow, don't they? Let's give it a little water. (Pour a drop of water in the pot.)

Would you like to look at the plant through this?

(Place viewer



over the plant.)
--covered with paper

How does the plant look now? Why does it look bigger?

Did it grow?

Question 13: If you travelled all over the world do you think it would be possible to see a real live dragon? Where? or Why?

Question 14: You know the story of Little Red Riding Hood? Sometimes that story is told in a different way. In one story I know, the wolf swallowed the grandmother in one gulp. Later when the woodsman killed the wolf, he took out his hunting knife and very carefully cut open the wolf's tummy. Out popped the grandmother safe and sound--not hurt a bit! Do you think that could really happen? How could that happen? or Why not?

Question 15: You've heard about elves? Do you think there might be such little people as elves? What makes you think there are (aren't) elves?

The 'You and Your Child' Cueing Inventory. This instrument was designed by the investigator for the purposes of (1) collecting information regarding parental cueing practices in respect to the nature of phenomena encountered by the child; and (2) obtaining data regarding the child's age, birthdate, and total months of schooling. The parental cueing practice section consisted of seven questions designed to indicate one of three possible cueing practices. For each question the parent was asked to choose one response from among the following: (1) a response which indicated that the parent usually informed the child regarding the nature of the phenomenon or corrected the child's misinformation (direct cueing), (2) a response which indicated indifference on the parent's part towards the child's attempts to cognize the nature of the phenomenon or the parent's failure to direct the child's attention to the nature of the phenomenon (no cueing), and (3) a response which indicated reinforcement of the child's misinformation or the suggesting or imparting of misinformation to the child (miscueing). The pilot study served to assist in the refinement of this instrument. Three of the items corresponded directly to three of the criterion test items, two items were indirectly related to criterion items, and the other two items dealt with the parent's handling of events involving causality. A copy of the inventory is included in Appendix B.

The Columbia Mental Maturity Scale. The 1959 revision of the Columbia Mental Maturity Scale was used for the purpose of obtaining a mental age and an index of intelligence (IQ) for each subject. This picture test of general intelligence calls for no verbal responses and a minimum of motor responses. It is an individual test based almost entirely on the subject's ability to recognize common concepts and classes of things in the natural environment. (Jensen, 1966, p. 150) Thus the test taps past learning and recall rather than current learning. The test was standardized on a normal population of three through twelve year olds. The correlation between the Columbia Mental Maturity Scale IQ and the Stanford-Binet IQ is reported to be .78. (Burgemeister, Blum, and Lorge, 1954, p. 11) Buros (1965) reports a correlation of .45 and .52 respectively with the WISC verbal and performance measures. The reliability coefficient, as stated in the Columbia Mental Maturity Scale Manual, is .89 for four year olds and .91 for five year olds. (1954, p. 11)

III. THE TESTING PROGRAM

The Real-Unreal Distinctions Test was administered by the investigator to a total sample of seventy-two subjects during a two-week period at the end of May, 1968. All the testing with this instrument was done in the mornings. Each subject was tested individually in a room separated from the

classroom except in the case of some three-year-old nursery school children whose classes had been discontinued as of the end of April. These children were tested individually in a private room in their homes. In both situations every effort was made to avoid interruptions.

The investigator also took a small guinea pig in a cage to these morning sessions. Ten to fifteen minutes were spent in discussion with the total class regarding this pet prior to any testing. In the case of the home testing situation, the subject accompanied the investigator to the car to see and talk about the guinea pig and also helped to carry some of the test materials to the house. As a result of this kind of an introduction the subjects appeared, with one or two exceptions, to be quite at ease and eager to communicate with the investigator.

To commence the testing, the children were told, "I have some things I would like to show you and talk with you about. I'm very interested in what you think about certain things." The questions were then presented in the order in which they appear in the test format. Answers were recorded manually on the specially designed score sheet (see Appendix A) as well as recorded on tape for the purpose of later verification of the responses. Each subject's score sheet and tape footage was assigned a code number at this time. Approximately twelve minutes was required for the

total administration of the test to each subject.

Immediately following the morning testing session, the investigator telephoned each subject's home in order to solicit the cooperation of the mother and to make an afternoon appointment to visit the home within a week to ten days in order to continue the investigation. In every case, the mother cooperated fully. The investigator administered the Columbia Mental Maturity Scale, according to the instructions given in the test manual, to the child privately in one room while the mother completed the 'You and Your Child' Cueing Inventory in another room.

IV. THE SCORING OF THE TESTS

The Real-Unreal Distinctions Test. At the end of each testing day the investigator checked and scored the responses of all the subjects who had been tested that morning. The subject received a score of one for each identification considered by the examiner to be correct and a score of zero for each identification considered by the examiner to be incorrect. In rare cases where the subject seemed to be undecided about an item--that is, he kept changing his response, it was assumed that the child was unable to make the distinction and he was assigned a score of zero. Under this system of scoring the maximum possible score for the test was 15.

The 'You and Your Child' Cueing Inventory. Each item was scored according to the predetermined response classification. Using the code, DC for direct cueing, NC for no cueing, and MC for miscueing, the investigator pencilled the appropriate letters in the left margin of the inventory. The total number of responses falling in each category was then recorded at the top of the inventory.

The subject was assigned to the category of inconsistent cueing (IC) on the arbitrary basis of having received two or more DC scores and two or more MC scores. Otherwise he was assigned to the consistent cueing category (CC).

A chronological age score in months was computed from the information concerned with the age of the child and the birthdate.

The total months of schooling was noted directly from the instrument.

The Columbia Mental Maturity Scale. This test was scored according to the test manual. The raw score was converted into a mental age score in months according to the conversion table that was provided with the test. An intelligence quotient was then computed for each subject.

V. THE STATISTICAL PROCEDURES

In view of the fact that the Real-Unreal Distinctions Test was designed by the investigator, the reliability of the instrument was checked by means of the Kuder-Richardson formula. This analysis was done on the computer at the University of Alberta.

The relationships between the scores on the Real-Unreal Distinctions Test and the variables of chronological age, mental age, IQ, cueing practices, months of schooling, and sex were found by examining the intercorrelations between the scores and the variables. The correlation analysis was done by means of the REG 200 computer program at the University of Alberta.

CHAPTER IV

THE RESULTS OF THE INVESTIGATION

This chapter will present (1) a summary of the test results for the sample; (2) an analysis of the effectiveness of the testing instrument; (3) an interpretation of the statistical analysis used to evaluate the test results in terms of the first six questions posed by the study; and (4) an analysis of the data for the purpose of suggesting possible developmental features referred to in questions seven and eight.

I. SUMMARY OF TEST RESULTS FOR THE SAMPLE

The sample. The range, median, mean, and standard deviation of the chronological age, mental age, intelligence, and cumulative schooling scores are shown in Table I. It can be seen from this table that the intelligence mean of this sample was above the general population mean.

Table II shows the distribution of the IQ scores for the sample. As indicated in this table, the younger subjects tended to be brighter than the older subjects.

The distribution of cueing scores with respect to cueing practice is shown in Table III. It can be seen from this table that there was very little difference between the frequency of direct cueing and no cueing practices as revealed

TABLE I

RANGE, MEDIAN, MEAN AND STANDARD DEVIATION WITH RESPECT
TO CHRONOLOGICAL AGE, MENTAL AGE, INTELLIGENCE,
AND SCHOOLING FOR THE SAMPLE

| Variable | Range | Median | Mean | Standard Deviation |
|-----------------------------------|--------|--------|-------|-----------------------|
| Chronological Age in Months | 36-76 | 59 | 59.6 | 10.5 |
| Mental Age in Months | 48-90 | 67 | 66.6 | 10.2 |
| IQ | 85-145 | 113 | 112.9 | 12.5 |
| Cumulative Schooling in Months | 4-18 | 9 | 9.2 | 3.2 |

TABLE II
DISTRIBUTION OF IQ SCORES FOR THE SAMPLE

| IQ | Age in Months | | | | | | | Total |
|---------|---------------|-------|-------|-------|-------|-------|-------|-------|
| | 35-40 | 41-46 | 47-52 | 53-58 | 59-64 | 65-70 | 71-76 | |
| 140-149 | 1 | | 2 | | | | | 3 |
| 130-139 | 1 | 1 | 2 | | | | | 4 |
| 120-129 | | 1 | 4 | 3 | 3 | | | 11 |
| 110-119 | | 3 | 4 | 4 | 7 | 3 | 8 | 29 |
| 100-109 | | | 3 | 3 | 2 | 5 | 2 | 15 |
| 90-99 | | | | 2 | 1 | 2 | 4 | 9 |
| 80-89 | | | | | | | 1 | 1 |
| Total | 2 | 5 | 15 | 12 | 13 | 10 | 15 | 72 |

TABLE III
PERCENTAGE DISTRIBUTION OF CUEING SCORES
WITH RESPECT TO CUEING PRACTICE

| Cueing Practice | Percentage of Total Cueing Score |
|-----------------|-------------------------------------|
| Direct Cueing | 42.1 |
| No Cueing | 44 |
| Miscueing | 13.9 |
| Total | 100 |

by the 'You and Your Child' Cueing Inventory. In addition, only 13.9 per cent of the total cueing scores represented mis-cueing practices.

On the basis of the criterion used for the assignment of subjects to categories, only fifteen of the seventy-two subjects were considered as inconsistently cued. In other words, 20.8 per cent of the sample were considered to be inconsistently cued whereas 79.2 per cent were considered to be fairly consistently cued.

The test. A copy of the criterion test used in this study was contained in Chapter III. The test consisted of fifteen scorable items designed to measure the child's ability to identify the reality or unreality (as commonly perceived by adults) of selected fanciful and misleading phenomena. The total possible score for the test was fifteen points.

The raw data for the sample is contained in Appendix C. The highest score obtained for the test was fourteen and the lowest score was two. The mean score for the sample was 8.7.

As reported in Chapter III, the total sample for this study consisted of the sum of three age groups. Although these three age groups are not comparable from the standpoint of age range, for the purposes of presenting a more discriminative account of test performance, results will be reported and discussed with respect to these designated

groups as well as for the total sample.

The mean performance score for each of the three age groups is given in Table IV. It is apparent from this table that performance improved with each successive age group.

Table V is a summary of the performance on the individual test items for each group and for the total group. A summary of the children's explanations of the reality or unreality of each test item is contained in Appendix D.

It will be noted from Table V that, with the exception of items four, nine, and fifteen, there was an increase in the percentage of correct responses with an increase in the age of the group.

Items one (the cow jumping over the moon), three (the dish and spoon running), six (ghosts), and eleven (giants) were answered correctly by all the third group subjects. Performance for the total sample was also high on items three (dish and spoon running), six (ghosts) and eleven (giants). In addition, items ten (Sleeping Beauty) and fourteen (the wolf and the grandmother) were also high performance items for the total group. The higher performance on item three might be attributed to an earlier recognition by the child of the delimiting attributes of such frequently used objects or the more successful performance might also have been a resultant of the picture stimulus itself--that is, the unnatural attributes were more perceptually

TABLE IV
MEAN SCORE BY AGE GROUP

| Group | Age Range | Mean Score |
|-------------|---------------|------------|
| 1 (N=24) | 3.6-4.5 years | 5.46 |
| 2 (N=24) | 4.6-5.5 years | 8.63 |
| 3 (N=24) | 5.6-6.4 years | 12.25 |

TABLE V
PERCENTAGE OF SAMPLE ANSWERING THE TEST ITEMS CORRECTLY

| Item | Group 1 (3.6-4.5 years) N=24 | Group 2 (4.6-5.5 years) N=24 | Group 3 (5.6-6.4 years) N=24 | Total Sample N=72 |
|--|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------|
| 1. cow jumping over moon | 21 | 67 | 100 | 63 |
| 2. cat playing violin | 21 | 54 | 96 | 57 |
| 3. dish and spoon running | 46 | 67 | 100 | 71 |
| 4. dog standing on hind legs | 58 | 46 | 25 | 43 |
| 5. Flying Nun | 17 | 46 | 79 | 47 |
| 6. ghosts | 46 | 83 | 100 | 76 |
| 7. Jack Frost | 13 | 63 | 92 | 56 |
| 8. fairies | 29 | 42 | 71 | 47 |
| 9. tadpole-frog | 71 | 67 | 58 | 65 |
| 10. Sleeping Beauty | 54 | 71 | 92 | 72 |
| 11. giants | 42 | 71 | 100 | 71 |
| 12. plant-magnifier | 13 | 46 | 92 | 50 |
| 13. dragons | 33 | 54 | 67 | 51 |
| 14. wolf and grand- mother in <u>Little</u> <u>Red Riding Hood</u> | 50 | 67 | 96 | 71 |
| 15. elves | 33 | 21 | 58 | 38 |

captivating. The remaining high performance items, six, ten, eleven and fourteen, might have evoked a response in the children similar to what Craddick has termed a "perceptual shove." (Solley, 1966) Stimuli such as 'ghosts', 'giants' and 'wolves eating people' could certainly be frightening to young children and, as every parent knows, what child likes the idea of having a sleep or going to bed? In this case, the attempt to avoid or push away unpleasant or frightening events may have elicited a response which denied the reality of those phenomena. Another possible explanation for the more successful performance on these items might be that the contexts of the phenomena in question are very familiar to most young children. Therefore, it is possible that these very events had been questioned in the past by many of the subjects.

The total successful response was lowest on the test for items four (dog), five (Flying Nun), eight (fairies), and fifteen (elves). The response patterns on items eight (fairies) and fifteen (elves) may reflect the positive influences of affect. As noted from Table V, the response success for the 'fairy' item was under fifty per cent. Many of the children's explanations for this item centered around the idea that fairies give children money for their teeth. (See Appendix D) It can also be seen from Table V that total performance on item fifteen (elves) was the lowest for the test. The children in the first group may have been

relatively unfamiliar with the phenomenon in question. The response pattern, as shown in Table V, and the types of explanations given by the children (See Appendix D) would seem to suggest that the children in the second group were very much aware of the connection between elves and Santa Claus. Also, members of third group frequently referred to this context in their responses to the item. To the extent that the child is unable to separate the figure (elves) from the ground (Santa and Christmas) (Witkin, 1954) and to the extent that ground (affect) influences the perception of the figure (Solley, 1966), then the child is likely to perceive elves as real because that is what he so wishes or desires.

The credibility of one's own observations or of what one sees with one's own eyes might have contributed to the lower performance on the 'Flying Nun' item. The children's explanations for this item (See Appendix D) would seem to lend some credence to the suggestion by Navarra (1955) that a child first accepts his observations as true and only later recognizes that there are factors present in such events that are not apparent to the eye.

As indicated in Table V, not only was response success for item four (the dog) low but also the response pattern indicates decreasing success with increasing age group level. The higher performance of the youngest group was perhaps the result of the development of a response set

or the result of a global inference regarding the nature of the total picture. The very low performance of the oldest group might also be attributed to the development of a response set or the very unusualness of the phenomenon itself may have presented the difficulty.

A similar decreasing pattern of response success is noted for item nine, the tadpole-frog item. (See Table V) This type of response pattern and the low response success of the first group on item seven (Jack Frost) would seem to lend some credence to the statements made by Blonsky (1964) and the findings of Ausubel and Schiff (1954) regarding the unquestioning acceptance by young children of statements made by adults. In further regard to the ninth item, it is interesting to note that some of the explanations of the older children (See Appendix D) would seem to indicate that the decision not to accept the reality of the event was based upon the same type of principle as mentioned earlier by Navarra (1955). In other words, many of the older subjects seemed to base their decision upon the principle: an animal is what he is and can't be something else.

The response pattern on item twelve (the plant and the magnifier) would seem to suggest a point made by Piaget and others, that is, very young children are unable to compensate or correct for transformations in appearances.

In addition to the factors mentioned in the foregoing

discussions, there is at least one other factor that might have influenced performance on some of the test items. It seems possible that the child's responses to an adult questioner may have been influenced to some extent by the child's expectations of what adults such as this one expect in the way of beliefs from young children.

II. THE EFFECTIVENESS OF THE TEST

The internal consistency or item homogeneity of the test was determined by computer analysis using the Kuder-Richardson 20 formula. According to Ferguson, if the items on a test have high intercorrelations with each other and are measures of much the same attribute, then the reliability coefficient will be high. (1959, p. 281) A correlation of .806 was obtained for the test. Thus it can be assumed that the items on this test measure much the same ability.

Although no statistical procedures were used to evaluate the validity of the test, through consultation with three authorities, the content validity of the test was established. In addition, the nature of the test results as shown in Table V, would seem to suggest that the test is measuring somewhat effectively the ability of children at different age levels to identify the reality or unreality of the selected phenomena. It can be seen from Table V that,

with the exception of items four, nine, and fifteen, a similar pattern of increasing response success with increasing age is clearly evinced. Item four appears to be a somewhat ineffective measure of the child's ability to identify the reality or unreality of phenomena. Although the response patterns of items nine and sixteen do not follow the pattern of increasing success with increasing age, the items do contribute significant information regarding the ability of young children to identify the reality or unreality of the phenomena in question.

III. ANALYSIS OF THE FACTORS RELATED TO THE ABILITY TO IDENTIFY THE REALITY OR UNREALITY OF THE SELECTED PHENOMENA

This section will present the results and an interpretation of the results of that part of the study concerned with assessing the factors which are possibly related to the child's ability to distinguish the reality or unreality of the selected phenomena.

Intercorrelations were found between the scores on the Real-Unreal Distinctions Test and the variables of chronological age, mental age, IQ, parental cueing practices, cumulative schooling and sex. Since frequent reference will be made in this section to intercorrelations between the variables, all of these intercorrelations are presented in Table VI.

TABLE VI
INTERCORRELATIONS OF ALL VARIABLES

| | Mental Age | Intelligence | Direct Cueing | No Cueing | Miscueing | Cueing Consistency | Cumulative Schooling | Sex | Real-Unreal Scores |
|----------------------|------------|--------------|---------------|-----------|-----------|--------------------|----------------------|------|--------------------|
| Chronological Age | .801** | -.544** | -.072 | .089 | -.021 | .013 | .329** | .012 | .747** |
| Mental Age | | .053 | -.041 | .106 | -.097 | .093 | .345** | .033 | .742** |
| Intelligence | | | .021 | .043 | -.096 | .139 | -.101 | .016 | .210 |
| Direct Cueing | | | | -.812** | -.353** | .154 | -.141 | .191 | .028 |
| No Cueing | | | | | .196 | .276* | .080 | .114 | .036 |
| Miscueing | | | | | | -.636** | .088 | .105 | -.061 |
| Cueing Consistency | | | | | | | .090 | .034 | .050 |
| Cumulative Schooling | | | | | | | | .070 | .171 |
| Sex | | | | | | | | | .093 |

Note: ** $r \geq .302$ at the .01 level of significance
* $r \geq .233$ at the .05 level of significance

Each of the first six questions posed by the study will now be considered in turn.

Question one. Is there a significant correlation between chronological age and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?

A study of Table VI indicates that a highly significant correlation of .747 exists between chronological age and the test score. This correlation would seem to indicate that, with an increase in age, the subject is better able to identify the reality or unreality of the selected phenomena. Thus, as a child increases in chronological age, one can predict an increase in his real-unreal test score.

Therefore it is concluded that a highly significant relationship exists between chronological age and the ability to identify the reality or unreality of selected fanciful and misleading phenomena.

Question two. Is there a significant correlation between mental age and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?

An examination of Table VI reveals that a highly significant correlation of .742 exists between mental age and the real-unreal scores. This correlation would seem to suggest that as a child's mental age increases he is better

able to identify the reality or unreality of the selected phenomena. Thus as the child increases in mental age, one can predict that there will be an increase in his real-unreal test score.

Therefore it is concluded that a highly significant relationship exists between mental age and the ability to identify the reality or unreality of selected fanciful and misleading phenomena.

In view of the significant correlation that exists for both chronological age and the test score and mental age and the test score, it can be concluded that some maturational factor is involved in the development of the ability to identify the reality or unreality of the selected phenomena.

Question three. Is there a significant correlation between intelligence and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?

A study of Table VI reveals that there is no significant correlation between IQ scores as measured by the Columbia Mental Maturity Scale and the real-unreal test scores. It is therefore concluded that intelligence, as measured in this study for this sample, is not a useful predictor of the ability to identify the reality or unreality of the selected phenomena.

Question four. Is there a significant correlation between any of the parental cueing practices considered in

the study and the child's ability to identify the reality or unreality of the selected phenomena?

As shown in Table VI, there is no significant correlation between any of the parental cueing practices considered and the child's ability to identify the reality or unreality of selected fanciful and misleading phenomena.

It should be remembered that findings in regard to cueing practices were based upon a specially designed measure, 'You and Your Child' Cueing Inventory, for which no statistical procedures were utilized to evaluate the reliability or validity of the instrument.

It is concluded, on the basis of the findings of this study, that knowledge of parental cueing practice is not useful in the prediction of the child's ability to identify the reality or unreality of selected fanciful and misleading phenomena.

Question five. Is there a significant correlation between cumulative months of schooling and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?

It is shown in Table VI that there is no significant correlation between cumulative schooling scores and the real-unreal test scores. It is thus concluded that knowledge of cumulative schooling is not a useful predictor of the child's

ability to identify the reality or unreality of the selected phenomena.

Question six. Is there a significant correlation between sex and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?

As indicated in Table VI, there is no significant correlation between the sex of the child and the real-unreal test scores. Thus knowledge of the sex of the child does not enable one to predict that child's ability to identify the reality or unreality of the selected phenomena.

IV. ANALYSIS OF POSSIBLE DEVELOPMENTAL FEATURES IN THE ABILITY TO IDENTIFY THE REALITY OR UNREALITY OF THE SELECTED PHENOMENA

The analysis of the data that was done in an effort to reveal developmental trends and other possible features of the development of the ability of young children to identify the reality or unreality of the selected phenomena will be reported in respect to questions seven and eight.

Question seven. Is there a progressive development with age of the ability to identify the reality or unreality of selected fanciful and misleading phenomena?

It has been indicated in section one of this chapter that response success to the test items generally increased with the age of the group. Furthermore, in section two, it

was concluded that chronological age was significantly correlated with the ability of the subject to identify the reality or unreality of the selected phenomena.

Figure 1 shows the mean test scores in relation to chronological age and mental age. The lines that describe the relationship between age, both chronological and mental, and the test scores are seemingly monotonic ascending in nature. Therefore, it is concluded that there is a progressive development with age of the young child's ability to identify the reality or unreality of selected fanciful and misleading phenomena.

Question eight. Are there any discernible tendencies in the development of the ability to identify the reality or unreality of the selected phenomena as indicated by the subjects' performance on the test?

- a) Is there a tendency for very young children to accept the reality of the phenomena about them and then, as the children grow older, to begin to question the reality of certain fanciful and misleading phenomena?

Table VII shows the real-unreal classifications of each item as identified by at least fifty per cent of the members of each group. As indicated in this table, fourteen of the fifteen items were designated by the first group as real, five were so designated by the second group, and only

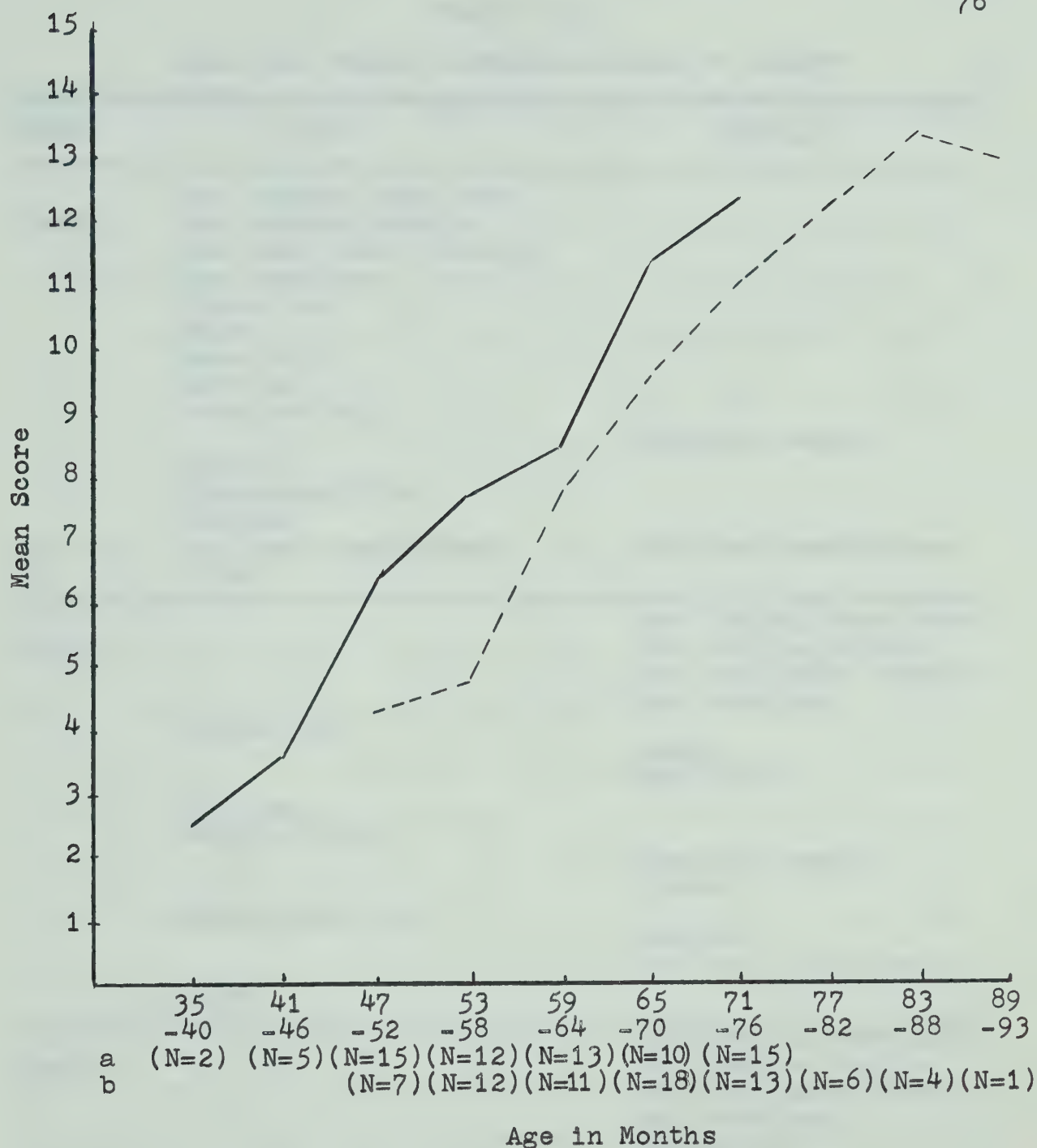


FIGURE I

MEAN SCORE BY CHRONOLOGICAL AGE AND MENTAL AGE

— chronological age

---- mental age

a = number of subjects in chronological age interval

b = number of subjects in mental age interval

TABLE VII

REAL AND UNREAL CATEGORIZATIONS BY GROUP*

| Group | Real | Unreal |
|-------------|---|--|
| 1 (N=24) | cow jumping over moon cat playing violin dish and spoon running dog standing Flying Nun ghosts Jack Frost fairies tadpole-frog giants plant-magnifier dragons wolf and grandmother elves | Sleeping Beauty wolf and grandmother |
| 2 (N=24) | Flying Nun fairies tadpole-frog plant-magnifier elves | cow jumping over moon cat playing violin dish and spoon running dog standing ghosts Jack Frost Sleeping Beauty giants dragons wolf and grandmother |
| 3 (N=24) | tadpole-frog | cow jumping over moon cat playing violin dish and spoon running dog standing Flying Nun ghosts Jack Frost fairies Sleeping Beauty giants plant-magnifier dragons wolf and grandmother elves |

*Allocations of phenomena by group are based upon at least fifty percent of the group members so categorizing each phenomena.

one by the third group. Therefore it is suggested that very young children tend to accept the reality of most phenomena and then, as the children grow older, to begin to question the reality of certain fanciful and misleading phenomena.

- b) Does the affect value of phenomena appear to be related to the child's perceptions of the reality or unreality of that phenomena?

The possible influence of perceptual rejection upon responses to items six (ghosts), ten (Sleeping Beauty), eleven (giants), and fourteen (wolf and grandmother) was discussed in section one of this chapter. It was suggested that, in an attempt to avoid or push away unpleasant or frightening events, the child denied the existence of such events. The possible influence of positive affect was also discussed in section one of this chapter in regard to items eight (fairies) and fifteen (elves). It was noted that the children's explanations with respect to these items seemed to suggest the strong presence of the affective component of their experiences with these two phenomena. These observations would seem to lend credence to Solley's position (1966) that (1) children have difficulty perceiving things out of their usual contexts; and (2) the child's perceived world is structured about his wishes, desires, and emotions. It is therefore suggested that the affect value of the phenomenon is perhaps related to the child's perception of

the reality or unreality of that phenomenon.

- c) Does the veracity of the child's own observations appear to be related to the child's perceptions of the reality or unreality of certain phenomena?

A disposition to "believe what one sees" might have been related to the first group's lowered performance, as shown in Table V, on items five (Flying Nun) and twelve (plant and magnifier). Also, a study of the explanations given by the children, as contained in Appendix D, reveals that quite frequently children referred to the veracity of their own observations, especially in regard to the existence of imaginary creatures. However, from the meagre evidence available from this study, the formulation of any possible relationship between the veracity of a child's observations and his perceptions of the reality or unreality of certain phenomena would not be justified.

- d) Is there any discernible difference in performance on test items involving purely imaginative phenomena as compared with performance on test items involving phenomena which possess some attributes of reality?

The rank order of item difficulty for each of the three groups and for the total sample, as determined by the number of correct responses, is shown in Table VIII. An examination of this table reveals no definitive placement

TABLE VIII

RANK ORDER OF ITEM DIFFICULTY BY GROUP SCORE AND TOTAL SAMPLE SCORE

| Group 1 | | Group 2 | | Group 3 | | Total Sample | |
|------------------------------|-------|------------------------------|-------|------------------------------|-------|------------------------------|-------|
| Item | Score | Item | Score | Item | Score | Item | Score |
| 7. Jack Frost | 3 | 16. elves | 5 | 4. dog standing on hind legs | 6 | 16. elves | 27 |
| 13. plant and magnifier | 3 | 8. fairies | 10 | 9. tadpole-frog | 14 | 4. dog standing on hind legs | 31 |
| 5. Flying Nun | 4 | 5. Flying Nun | 11 | 16. elves | 14 | 5. Flying Nun | 34 |
| 1. cow jumping over moon | 5 | 13. plant and magnifier | 11 | 14. dragons | 16 | 8. fairies | 34 |
| 2. cat playing violin | 5 | 4. dog standing on hind legs | 11 | 8. fairies | 17 | 13. plant and magnifier | 36 |
| 8. fairies | 7 | 13. cat playing violin | 13 | 5. Flying Nun | 19 | 14. dragons | 37 |
| 14. dragons | 8 | 14. dragons | 13 | 7. Jack Frost | 22 | 7. Jack Frost | 40 |
| 16. elves | 8 | 7. Jack Frost | 15 | 11. Sleeping Beauty | 22 | 2. cat playing violin | 41 |
| 12. giants | 10 | 1. cow jumping over moon | 16 | 13. plant and magnifier | 22 | 1. cow jumping over moon | 45 |
| 3. dish and spoon running | 11 | 3. dish and spoon running | 16 | 2. cat playing violin | 23 | 9. tadpole-frog | 47 |
| 6. ghosts | 11 | 9. tadpole-frog | 16 | 15. wolf and grandmother | 23 | 3. dish and spoon running | 51 |
| 15. wolf and grandmother | 12 | 15. wolf and grandmother | 16 | 1. cow jumping over moon | 24 | 12. giants | 51 |
| 11. Sleeping Beauty | 13 | 11. Sleeping Beauty | 17 | 3. dish and spoon running | 24 | 15. wolf and grandmother | 51 |
| 4. dog standing on hind legs | 14 | 12. giants | 17 | 6. ghosts | 24 | 11. Sleeping Beauty | 52 |
| 9. tadpole-frog | 17 | 6. ghosts | 20 | 12. giants | 24 | 6. ghosts | 55 |

patterns that might suggest a differential response to items involving purely imaginative phenomena as compared with items involving phenomena which possess some attributes of reality.

V. SUMMARY OF FINDINGS

The major findings of this study may be briefly summarized as follows:

1. A highly significant correlation was found to exist between chronological age and the ability to identify the reality or unreality of selected fanciful and misleading phenomena.
2. A highly significant correlation was found to exist between mental age and the ability to identify the reality or unreality of selected fanciful and misleading phenomena.
3. No significant correlation was found to exist between intelligence and the ability to identify the reality or unreality of selected fanciful and misleading phenomena.
4. No significant correlation was found to exist between any of the various parental cueing practices considered and the child's ability to identify the reality or unreality of the selected phenomena.

5. No significant correlation was found to exist between cumulative schooling and the ability to identify the reality or unreality of selected fanciful and misleading phenomena.
6. No significant correlation was found to exist between sex and the ability to identify the reality or unreality of selected fanciful and misleading phenomena.
7. There was a progressive development with age of the young child's ability to identify the reality or unreality of selected fanciful and misleading phenomena.

An examination of the data for possible features characterizing the development of the ability to identify the reality or unreality of the selected phenomena indicated the following:

8. a) There appeared to be a tendency for very young children to accept the reality of the phenomena about them and then, as the children increased in age, to begin to question the reality of certain fanciful and misleading phenomena.
- b) Affect value of the phenomena may have possibly been related to the child's perceptions of the reality or unreality of those phenomena.
- c) There was a suggestion that the veracity of the

child's own observations may have been related to his perceptions of the reality or unreality of certain phenomena but there was insufficient evidence from this study to justify such a proposition.

- d) There appeared to be no discernible difference in performance on test items involving purely imaginative phenomena as compared with performance on test items involving phenomena which ordinarily possess some attributes of reality.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

1. PURPOSES AND PLAN OF THE STUDY

It was the purpose of this study to (1) investigate the ability of preschool children to identify the reality or unreality of selected fanciful and misleading phenomena, (2) identify some of the factors which are related to the development of this ability, and (3) examine possible developmental features of the young child's ability to identify the reality or unreality of the selected phenomena. The study was undertaken in the hope that it might provide an indication of what preschool children consider to be real or unreal and that knowledge of this type might enable the teachers of young children to provide experiences which will facilitate the healthy development of children's ability to identify the reality or unreality of the phenomena in the world about them.

The development of the ability to identify the reality or unreality of phenomena was investigated by means of a test designed by the investigator. This test consisted of fifteen items of a fanciful or misleading nature.

The sample was comprised of seventy-two preschool subjects from Edmonton, Canada, and was selected in the

following manner. From a list of preschool institutions that (1) levied a fee, (2) were taught by certified teachers, and (3) were deemed to be located in middle or upper socioeconomic areas, the names of six nursery schools and six kindergartens were chosen randomly. The joint population from these twelve institutions was then partitioned into three age levels and each age level was further partitioned by sex. From each of these six groups, twelve subjects were drawn at random. This procedure yielded a total sample of seventy-two subjects. The chronological age of the sample ranged from three years through six years, four months; the mental age from four years through seven years, six months; the IQ from eighty-five points through one hundred forty-five points; and the cumulative months of schooling from four months through eighteen months. The mean IQ of the sample, as measured by the Columbia Mental Maturity Scale, was 112.9. IQ was found to correlate $-.54$ with chronological age for the sample which indicates that the younger subjects tended to be brighter than the older subjects. Miscueing of the children by the parents, as determined by the 'You and Your Child' Cueing Inventory, was found to be infrequent; direct cueing and no cueing practices occurred with about equal frequency; and the sample as a whole was found to be fairly consistently cued with respect to the consistent use of these practices by the parent.

The test was administered to each subject in an individual testing situation. Every effort was made to ensure that the testing situation did not vary significantly from one subject to another. The testing program was conducted during the last two weeks of May, 1968.

Certain limitations of the study must be considered in any interpretation of the results and conclusions which follow. A fundamental assumption of the study is that the test used was a fairly valid measure of the ability of young children to identify the reality of unreality of selected fanciful and misleading phenomena as commonly perceived by adults. It should also be held in mind that results posited for cueing practices were based upon responses to a specially designed cueing inventory which may or may not have been a valid and reliable measure of actual parental cueing practices. Also, it should be remembered that the study was based upon a limited sample of middle and upper socioeconomic status urban children whose mean IQ was above the population mean.

The statistical analysis of the data was done by means of the REG 200 computer program at the University of Alberta. In this analysis, answers were sought to the following questions.

1. Is there a significant correlation between chronological age and the ability to identify the

reality or unreality of selected fanciful and misleading phenomena?

2. Is there is significant correlation between mental age and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?
3. Is there a significant correlation between IQ and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?
4.
 - a) Is there a significant correlation between direct cueing of the child by the parent and the child's ability to identify the reality or unreality of selected fanciful and misleading phenomena?
 - b) Is there a significant correlation between no cueing of the child by the parent (indifference) and the child's ability to identify the reality or unreality of fanciful and misleading phenomena?
 - c) Is there a significant correlation between miscueing of the child by the parent and the child's ability to identify the reality or unreality of selected fanciful and misleading phenomena?
 - d) Is there a significant correlation between

cueing consistency and inconsistency of the child by the parent and the child's ability to identify the reality or unreality of selected fanciful and misleading phenomena?

5. Is there a significant correlation between cumulative months of schooling and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?
6. Is there a significant correlation between sex and the ability to identify the reality or unreality of selected fanciful and misleading phenomena?

In addition, the data was examined for possible developmental features. In this context, answers were sought to the following questions.

7. Is there a progressive development with age of the ability to identify the reality or unreality of selected fanciful and misleading phenomena?
8. Are there any discernible tendencies in the development of the ability to identify the reality or unreality of fanciful and misleading phenomena as indicated by the subjects' performance on the test?

II. SUMMARY OF FINDINGS

The following is a summary of the findings in terms of the questions posed.

1. A highly significant correlation was found to exist between chronological age and the ability to identify the reality or unreality of the selected fanciful and misleading phenomena.
2. A highly significant correlation was found to exist between mental age and the ability to identify the reality or unreality of the selected fanciful and misleading phenomena.
3. No significant correlation was found to exist between intelligence and the ability to identify the reality or unreality of the selected fanciful and misleading phenomena.
4. No significant correlation was found to exist between any of the parental cueing practices considered and the child's ability to identify the reality or unreality of the selected phenomena.
5. No significant correlation was found to exist between cumulative months of schooling and the ability to identify the reality or unreality of the selected phenomena.
6. No significant correlation was found to exist between sex and the ability to identify the reality

or unreality of selected fanciful and misleading phenomena.

7. There was a progressive development with age of the young child's ability to identify the reality or unreality of the selected phenomena.
8.
 - a) There appeared to be a tendency for very young children to accept the reality of the phenomena about them and then, as the children increased in age, to begin to question the reality of certain fanciful and misleading phenomena.
 - b) Affect value of the phenomena may possibly have been related to the child's perceptions of the reality or unreality of those phenomena.
 - c) Although there was a suggestion that the veracity of the child's own observations may have been related to his perceptions of the reality or unreality of certain phenomena, there was insufficient evidence from this study to justify such a proposition.
 - d) There appeared to be no discernible difference in performance on test items involving purely imaginative phenomena as compared with performance on test items involving phenomena which possess some attributes of reality.

III. CONCLUSIONS

On the basis of the findings of this study, the following conclusion may be formulated.

Some maturational factor or factors are involved in the development of the young child's ability to identify the reality or unreality of the selected phenomena. It seems reasonable to assume that the increment of experience over time is an important aspect in the development of this ability. In addition to this factor of more accumulated experience, the older preschool child also has the benefit of an increment of mental maturity. Thus it would seem that this increased capacity of the mind, in terms of the complexity of the thought structures now available, not only enables the older preschool child to direct and re-direct his perceptions more discriminately but also greatly facilitates the intellectual coding of his experiences. This formulation would seem to be in accordance with those ideas of Werner, Piaget, Vernon, Navarra, and Solley, as presented in the second chapter of this report.

IV. IMPLICATIONS

Some suggestions for parents and teachers of young children would seem to arise from the findings of this study.

1. Parents and teachers of young children should not assume that their children have the conceptual

ability to distinguish real from unreal phenomena. Adults in charge of very young nursery school children should be aware that these children tend to accept literally the reality of the phenomena about them. Thus it would seem, and this is in accord with the theories of Vernon (1966), that a prime task of the teacher of very young children is to assist the child to construct rich 'perceptual schemas'. This task entails not only the provision of many rich and varied experiences with both realistic and imaginative phenomena but also the use of questions and other indicating stimuli on the part of the teacher for the purpose of helping the child to integrate his perceptions. This type of instruction should furnish an effective base for the later operation of more conceptual activity. Similarly, kindergarten teachers should be aware that their students are at the age when they begin to question the reality of phenomena that are discrepant in terms of their experiences. Therefore, it would seem reasonable to assume that if the teacher provides the kinds of experiences or asks the types of questions that will cause the child to examine or re-orient his perceptions and his thinking, then the

development of the child's ability to identify the reality or unreality of phenomena would be greatly facilitated.

2. It appears to be incorrect to assume that bright young children may be advanced in this type of cognitive activity. It would seem that these children probably require much the same type of instruction as suggested above.

IV. SUGGESTIONS FOR FURTHER RESEARCH

Some suggestions for further research, arising out of this study, are presented below.

1. This investigation was of an exploratory nature, therefore, there is a need for replication studies. In view of certain limitations of the criterion measure and the cueing inventory, it is suggested that these instruments be subjected to further analysis. It is also suggested that the sample for a study such as this be (1) expanded to include children of lower socio-economic status, and (2) extended to include children up to and including eight-year olds.
2. Maturation was, in this study, concluded to be a key factor in the development of the child's ability to identify the reality or unreality of

of the selected phenomena. If experience is considered to be an important aspect of the maturational factor, then it would seem to justify a study to compare the performance of an experimental group of young children exposed to a rich, stimulating perceptual environment (such as suggested in the first implication of this study) with the performance of a control group on a measure of their ability to identify the reality or unreality of selected phenomena. Also, a study such as this might seek to compare the experimental group with the control group on an index of creativity.

3. This study suggested the possibility that there is (1) a relationship between the affect value of phenomena and the child's perceptions of the reality or unreality of those phenomena, and (2) a relationship between the veracity of the child's own visual confirmation of phenomena and his perceptions of the reality or unreality of certain phenomena. Both of these suggestions would seem to provide interesting possibilities for further research.
4. It was suggested, as a result of this study, that there is a tendency for very young children to

accept the reality of the phenomena about them and then, as the children grow older, to begin to question the reality of certain fanciful and misleading phenomena. Werner (1943) has posited an intermediate stage between the child's lack of distinction between the reality of fantasy and the reality of the real world and the child's acquisition of the realization of the difference between that which can actually be experienced in the world of physical reality and that which is a product of the human imagination. During this intermediate stage, according to Werner, the child possesses a notion of a reality that is removed from his 'here and now' reality where fanciful things really do exist. The design of the present study did not permit an investigation of this aspect of the development of the young child's ability to identify the reality or unreality of phenomena. However, it would seem that case studies of young children might be employed for this purpose. Also, through the case study method it might be possible to find out what 'reality' means to the child or his concept of reality at different ages.

5. The explanations given by the subjects in this study would seem to suggest that an investigation

into the credibility of authority references as perceived by the child might prove to be most interesting and worthwhile.

BIBLIOGRAPHY

- Ausubel, David P. The Psychology of Meaningful Verbal Learning. New York: Grune and Stratton, 1963.
- _____, and H.M. Schiff. "The Effect of Incidental and Experimentally Induced Experience in the Learning of Relevant and Irrelevant Causal Relationships by Children," Journal of Genetic Psychology, 84:109-123, 1954.
- Baldwin, Alfred. Behavior and Development in Childhood. New York: The Dryden Press, 1955.
- Blonsky, Pavel P. "The Psychology of Proof and Its Features in Children," translated by Metro Gulutson from "Psikhologiya dokazivanniya i yeyo osobennosti u detey," Voprosy Psikhologii, 3:40-54, 1964.
- Boehm, Lenore. "Exploring Children's Thinking," in Richard E. Ripple (ed.) Readings in Learning and Human Abilities. New York: Harper and Row, 1964, pp. 90-102.
- Brackbill, Yvonne (ed.) Infancy and Early Childhood. New York: The Free Press, 1967.
- Bruner, Jerome and C. Goodman. "Value and Need as Organizing Factors in Perception," Journal of Abnormal and Social Psychology, 42:33-44, 1947.
- Burgemeister, Bessie B, Lucille Hollander Blum, and Irving Lorge. Columbia Mental Maturity Scale Manual. New York: World Book Company, 1954.
- Buros, Oscar K. (ed.) Sixth Mental Measurements Yearbook. New Jersey: Gryphon Press, 1965, pp. 799-802.
- Carroll, John B. Language and Thought. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1964.
- Church, Joseph. Language and the Discovery of Reality. Toronto: Random House of Canada Limited, 1961.
- Elitcher, Helene. Children's Causal Thinking as a Function of Style and Question Wording. Unpublished Ph.D. Thesis, New York, 1966.
- Ezer, M. "The Effect of Religion Upon Children's Responses to Questions Involving Physical Causality," in J.F. Rosenblith and W. Allinsmith (eds.) The Causes of Behavior. Allyn and Bacon, Inc., 1962, pp. 481-487.

- Ferguson, George A. Statistical Analysis in Psychology and Education. Toronto: McGraw-Hill Book Company, 1959.
- Flavell, John H. The Developmental Psychology of Jean Piaget. Princeton, New Jersey: D. Van Nostrand Company, Inc., 1963.
- Forgus, Ronald. Perception. Toronto: McGraw-Hill Book Company, 1966.
- Gagne, Robert M. The Conditions of Learning. New York: Holt, Rinehart and Winston, Inc., 1965.
- Guilford, J.P. Fundamental Statistics in Psychology and Education. Toronto: McGraw-Hill Book Company, 1965.
- Hazlitt, Victoria. "Children's Thinking," British Journal of Psychology, 20:173-189, 1930.
- Huang, I. "Children's Conception of Physical Causality: A Critical Summary," The Journal of Genetic Psychology, 63:71-121, 1943.
- Inhelder, Barbel and Jean Piaget. The Early Growth of Logic in The Child. London: Routledge and Kegan Paul, 1964.
- Isaacs, Nathan. "Children's Scientific Interests," in First Years in School. University of London Institute of Education, London: Evans Rothers Limited, 1963.
- Isaacs, Susan. Intellectual Growth in Young Children. London: George Routledge and Sons, Ltd., 1930.
- Jenkinson, Marion. The Child and His World. Address to the Third Annual Conference of the Early Childhood Education Council, Alberta Teachers' Association, October, 1969.
- Jensen, Arthur R. "Individual Differences in Concept Learning," in Herbert J. Klausmeier and Chester W. Harris (eds.) Analyses of Concept Learning. New York: Academic Press, 1966, pp. 139-154.
- Kessen, William. The Child. New York: John Wiley and Sons, Inc., 1965.
- King, W.H. "The Development of Scientific Concepts in Children," British Journal of Educational Psychology, 31:1-17, 1960.

Langer, Jonas. Theories of Development. Toronto: Holt, Rinehart and Winston, Inc., 1969.

Laurendeau, Monique and Adrien Pinard. Causal Thinking in the Child. New York: International Universities Press, Inc., 1962.

Lovell, Kenneth. An Introduction to Human Development. London: Macmillan and Co. Ltd., 1968.

_____. Educational Psychology and Children. London: University of London Press, Ltd., 1964.

_____. "The Development of Scientific Concepts," in Aline H. Kidd and Jeanne L. Rivoire (eds.) Preceptual Development in Children. New York: International Universities Press, Inc., 1966, pp. 407-444.

Mogar, Mariannina. "Children's Causal Reasoning About Natural Phenomena," Child Development, 31:59-65, 1960.

Mussen, Paul H., John J. Conger, and Jerome Kagan. Child Development and Personality. New York: Harper and Row, 1963.

Nass, M.L. "The Effects of Three Variables on Children's Concepts of Physical Causality," Journal of Abnormal and Social Psychology, 53:191-196, 1956.

Navarra, John G. The Development of Scientific Concepts in a Young Child. New York: Teachers' College, Columbia University, 1955.

Oakes, Mervin, E.O. Children's Explanations of Natural Phenomena. New York: Teachers' College, Columbia University, 1947.

Piaget, Jean. "Children's Ideas" in Wayne Dennis (ed.) Readings in Child Psychology. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963, pp. 241-253.

_____. The Child's Conception of Physical Causality. London: Kegan, 1930.

_____. The Construction of Reality in the Child. New York: Basic, 1954.

_____. The Origins of Intelligence in Children. New York: International Universities Press, 1952.

- Pikas, Anatol. Abstraction and Concept Formation. Cambridge: Harvard University Press, 1966.
- Schmidt, W.H.O. "'Spontaneous' and 'Non-Spontaneous' Formation of Scientific Concepts by Children," Human Development, 8:222-237, 1965.
- Solley, Charles M. "Affective Processes in Perceptual Development," in Aline H. Kidd and Jeanne L. Rivoire (eds.) Perceptual Development in Children. New York: International Universities Press, Inc., 1966, pp. 275-304.
- _____ and Gardner Murphy. Development of the Perceptual World. New York: Harcourt, Brace and World, Inc., 1964, pp. 372-391.
- _____ and Mary Engel. "Perceptual Autism in Children," Journal of Genetic Psychology, 97:77-91, 1960.
- Vernon, M.D. "Cognitive Inferences in Perceptual Activity," British Journal of Psychology, 48:35-47, 1957.
- _____. "Perception in Relation to Cognition," in Aline H. Kidd and Jeanne L. Rivoire (eds.) Perceptual Development in Children. New York: International Universities Press, Inc., 1966, pp. 391-406.
- _____. "The Functions of Schemata in Perceiving," Psychological Review, 62:180-192, 1955.
- _____. "The Relation of Cognition and Phantasy in Children," British Journal of Psychology, 30:273-294, 1940.
- Vinacke, W. Edgar. The Psychology of Thinking. New York: McGraw-Hill Book Company, Inc., 1952.
- Vygotsky, L. "The Development of Scientific Concepts in Childhood," in Celia Stendler (ed.), Readings in Child Behavior and Development. New York: Harcourt, Brace and World, Inc., 1964, pp. 372-391.
- Wallace, J.G. Concept Growth and the Education of the Child. Hove, Sussex: King, Thorne and Stace Ltd., 1965.
- Werner, Heinz. Comparative Psychology of Mental Development. New York: International Universities Press, 1957.
- Witkin, H.A. and others. Personality Through Perception. New York: Harper, 1954.

APPENDIX A

SCORE SHEET: REAL-UNREAL DISTINCTIONS TEST

| Question | Score | Explanation |
|-------------|-------|-------------|
| 1 | Y N | |
| 2 | Y N | |
| 3 | Y N | |
| 4 | Y N | |
| <hr/> | | |
| 5 | Y N | |
| <hr/> | | |
| 6 | Y N | |
| <hr/> | | |
| 7 | Y N | |
| <hr/> | | |
| 8 | Y N | |
| <hr/> | | |
| 9 | Y N | |
| <hr/> | | |
| 10 | Y N | |
| <hr/> | | |
| 11 | Y N | |
| <hr/> | | |
| 12 | Y N | |
| <hr/> | | |
| 13 | Y N | |
| <hr/> | | |
| 14 | Y N | |
| <hr/> | | |
| 15 | Y N | |
| <hr/> | | |
| Total _____ | | |

(Insert
Question
Sheet)

APPENDIX B

YOU AND YOUR CHILD

Directions: Check (✓) the one part that best describes what you would usually do (or have done) with your child in each of the following situations.

1. When I have told my three year old child a nursery rhyme such as Hey Diddle Diddle, I would
 - ☐ a. probably encourage him (her) to sing or say it with me.
 - ☐ b. probably make such comments as: "That cow was really a good jumper, wasn't she?" or "I wonder what the moon thought when the cow jumped over him!" as well as encourage the child to sing or say the rhyme.
 - ☐ c. probably encourage him (her) to sing, say, or play (act out) the rhyme and/or ask such questions as: "Could a dish really run away with a spoon?" or "Do you think that our cat could play a fiddle?"
2. When I have read a story such as Cinderella to my four year old at bedtime, I would
 - ☐ a. probably tell him (her) that if he (she) is good and goes right to sleep then maybe a good fairy will make his (her) wishes come true.
 - ☐ b. probably ask such a question as, "Do you think a pumpkin could really turn into a coach?" and maybe comment about how much fun it is to pretend that things like that can happen.
 - ☐ c. probably say something like: "That was a good story, wasn't it?" or "What did you like about the story?" or "Would you like to tell me the story now?"
3. When my five year old child watches such television programs as Batman, The Flying Nun, or Bewitched, I usually
 - ☐ a. go along with the ideas that he (she) gets from these programs because he (she) enjoys them so.
 - ☐ b. say nothing to him (her) about the program.
 - ☐ c. make such comments as: "Isn't that silly?" or "That couldn't really happen, could it?"
4. If my three year old, when playing with a magnet and some metal objects, suddenly cries: "Look, Mom! It's magic!" I would probably
 - ☐ a. say, "Show me!" and then sit down and watch him (her).
 - ☐ b. ask, "Do you think it is really magic?" and then try to explain in simple terms how a magnet works.
 - ☐ c. say, "Yes, it is a bit like magic, isn't it?" and then go on with what I was doing.

5. If my three year old, when walking through the park with me on an autumn day, begins to collect some of the beautifully colored leaves, I would probably
- a. tell him (her) that Jack Frost painted the leaves with his paintbrush during the night.
 - b. talk with him (her) about their different colors and suggest that we take some home to press.
 - c. ask him (her) how he (she) thinks the leaves were colored and then attempt to explain the coloration in simple scientific terms.
6. If my five year old child, when at a fair, noticed a balloon floating upwards, I would likely
- a. explain that the balloon must be filled with helium or else the wind must be blowing it away.
 - b. ask him (her) if he (she) thinks that the balloon will enjoy the ride.
 - c. say, "Somebody's lost his balloon!"
7. If my four year old said to me, "Mom, Billy says there's no Santa Claus!" I would probably
- a. say, "Billy is only joking! Of course there is a Santa Claus!"
 - b. say, "Oh, so Billy thinks there is no Santa Claus!" and then start talking about something else.
 - c. attempt to explain 'Santa Claus' in terms of the spirit of Christmas.

Can you recall the last time that your child questioned some natural or imaginative phenomenon? What was it? Could you briefly describe how you handled the situation?

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Age of Child Birthdate:

 Years Day Month Year

Total Months of Schooling:

APPENDIX C

TABLE IX

RAW DATA

| Case Number | Chronological Age (in months) | Mental Age (in months) | IQ | Direct Cueing Score | No Cueing Score | Miscueing Score | Consistent-Inconsistent Cueing Category | Cumulative Schooling (in months) | Sex | Real-Unreal Score |
|-------------|-------------------------------|------------------------|-----|---------------------|-----------------|-----------------|---|----------------------------------|-----|-------------------|
| 1 | 36 | 52 | 144 | 2 | 4 | 1 | C | 8 | M | 2 |
| 2 | 38 | 51 | 134 | 3 | 3 | 1 | C | 8 | F | 3 |
| 3 | 41 | 55 | 134 | 3 | 3 | 1 | C | 5 | M | 2 |
| 4 | 41 | 48 | 117 | 2 | 3 | 2 | I | 9 | M | 3 |
| 5 | 43 | 54 | 126 | 4 | 2 | 1 | C | 7 | M | 8 |
| 6 | 45 | 52 | 116 | 1 | 5 | 1 | C | 8 | F | 3 |
| 7 | 46 | 54 | 118 | 4 | 2 | 1 | C | 8 | F | 2 |
| 8 | 48 | 53 | 110 | 3 | 2 | 2 | I | 8 | F | 5 |
| 9 | 49 | 61 | 124 | 2 | 3 | 2 | I | 7 | M | 10 |
| 10 | 49 | 58 | 118 | 2 | 3 | 2 | I | 7 | M | 2 |
| 11 | 49 | 52 | 106 | 4 | 3 | 0 | C | 6 | M | 5 |
| 12 | 49 | 69 | 141 | 1 | 4 | 2 | C | 8 | F | 8 |
| 13 | 49 | 67 | 137 | 5 | 2 | 0 | C | 8 | F | 10 |
| 14 | 49 | 59 | 120 | 2 | 4 | 1 | C | 6 | F | 7 |
| 15 | 50 | 66 | 132 | 4 | 2 | 1 | C | 5 | F | 6 |
| 16 | 50 | 61 | 122 | 4 | 3 | 0 | C | 7 | F | 8 |
| 17 | 51 | 56 | 110 | 3 | 4 | 0 | C | 6 | M | 8 |
| 18 | 51 | 74 | 145 | 2 | 5 | 0 | C | 4 | M | 8 |
| 19 | 51 | 66 | 129 | 4 | 2 | 1 | C | 8 | F | 11 |
| 20 | 52 | 52 | 100 | 3 | 3 | 1 | C | 16 | M | 3 |
| 21 | 52 | 54 | 104 | 6 | 0 | 1 | C | 9 | M | 2 |
| 22 | 52 | 57 | 110 | 1 | 4 | 2 | C | 7 | F | 5 |
| 23 | 53 | 64 | 121 | 3 | 4 | 0 | C | 8 | M | 2 |
| 24 | 53 | 55 | 104 | 2 | 4 | 1 | C | 13 | F | 8 |
| 25 | 54 | 58 | 107 | 6 | 1 | 0 | C | 7 | F | 2 |
| 26 | 55 | 65 | 118 | 5 | 2 | 0 | C | 7 | M | 9 |
| 27 | 55 | 50 | 91 | 3 | 3 | 1 | C | 5 | M | 11 |
| 28 | 55 | 64 | 116 | 2 | 5 | 0 | C | 8 | M | 6 |
| 29 | 55 | 56 | 102 | 2 | 3 | 2 | I | 7 | F | 9 |
| 30 | 56 | 71 | 127 | 3 | 3 | 1 | C | 16 | M | 10 |
| 31 | 56 | 69 | 123 | 2 | 5 | 0 | C | 9 | F | 11 |
| 32 | 57 | 64 | 112 | 4 | 1 | 2 | I | 8 | M | 10 |
| 33 | 57 | 63 | 111 | 6 | 1 | 0 | C | 9 | M | 10 |
| 34 | 58 | 56 | 97 | 2 | 3 | 2 | I | 10 | F | 6 |
| 35 | 59 | 66 | 112 | 2 | 5 | 0 | C | 17 | M | 4 |
| 36 | 59 | 65 | 110 | 3 | 2 | 2 | I | 8 | F | 7 |

TABLE IX (continued)

| Case Number | Chronological Age (in months) | Mental Age (in months) | IQ | Direct Cueing Score | No Cueing Score | Miscueing Score | Consistent-Inconsistent Cueing Category | Cumulative Schooling (in months) | Sex | Real-Unreal Score |
|-------------|-------------------------------|------------------------|-----|---------------------|-----------------|-----------------|---|----------------------------------|-----|-------------------|
| 37 | 60 | 61 | 102 | 1 | 4 | 2 | C | 9 | F | 8 |
| 38 | 61 | 69 | 113 | 3 | 2 | 2 | H | 7 | M | 7 |
| 39 | 61 | 69 | 113 | 3 | 3 | 1 | C | 17 | M | 12 |
| 40 | 61 | 67 | 110 | 4 | 2 | 1 | C | 9 | F | 11 |
| 41 | 61 | 64 | 105 | 4 | 2 | 1 | C | 9 | F | 11 |
| 42 | 61 | 70 | 115 | 5 | 2 | 0 | C | 9 | F | 11 |
| 43 | 62 | 59 | 95 | 4 | 1 | 2 | I | 7 | F | 6 |
| 44 | 62 | 75 | 121 | 2 | 5 | 0 | C | 16 | F | 7 |
| 45 | 63 | 78 | 124 | 4 | 2 | 1 | C | 10 | M | 12 |
| 46 | 63 | 72 | 114 | 5 | 1 | 1 | C | 9 | M | 12 |
| 47 | 64 | 78 | 122 | 2 | 2 | 3 | I | 16 | F | 11 |
| 48 | 65 | 67 | 103 | 2 | 5 | 0 | C | 9 | M | 4 |
| 49 | 66 | 76 | 115 | 3 | 4 | 0 | C | 9 | F | 14 |
| 50 | 67 | 73 | 109 | 2 | 4 | 1 | C | 15 | M | 10 |
| 51 | 67 | 76 | 113 | 2 | 3 | 2 | I | 9 | F | 12 |
| 52 | 67 | 77 | 115 | 1 | 6 | 0 | C | 9 | F | 13 |
| 53 | 68 | 69 | 101 | 4 | 3 | 0 | C | 8 | F | 13 |
| 54 | 69 | 73 | 106 | 2 | 5 | 0 | C | 9 | M | 12 |
| 55 | 70 | 68 | 97 | 3 | 2 | 2 | I | 8 | M | 12 |
| 56 | 70 | 74 | 106 | 1 | 4 | 2 | C | 16 | M | 10 |
| 57 | 70 | 69 | 99 | 4 | 3 | 0 | C | 9 | M | 13 |
| 58 | 71 | 67 | 94 | 2 | 4 | 1 | C | 8 | F | 13 |
| 59 | 72 | 81 | 113 | 4 | 2 | 1 | C | 7 | F | 14 |
| 60 | 73 | 81 | 111 | 3 | 3 | 1 | C | 9 | M | 12 |
| 61 | 73 | 81 | 111 | 5 | 2 | 0 | C | 8 | M | 12 |
| 62 | 73 | 67 | 92 | 1 | 4 | 2 | C | 9 | F | 11 |
| 63 | 74 | 74 | 100 | 5 | 2 | 0 | C | 9 | M | 12 |
| 64 | 74 | 72 | 97 | 4 | 1 | 2 | I | 9 | M | 13 |
| 65 | 74 | 85 | 115 | 2 | 5 | 0 | C | 18 | F | 13 |
| 66 | 74 | 88 | 119 | 1 | 4 | 2 | C | 9 | F | 12 |
| 67 | 74 | 75 | 101 | 3 | 3 | 1 | C | 9 | F | 14 |
| 68 | 75 | 64 | 85 | 0 | 6 | 1 | C | 10 | M | 8 |
| 69 | 75 | 72 | 96 | 1 | 5 | 1 | C | 9 | F | 10 |
| 70 | 76 | 90 | 118 | 3 | 3 | 1 | C | 16 | M | 13 |
| 71 | 76 | 88 | 116 | 5 | 2 | 0 | C | 8 | M | 14 |
| 72 | 76 | 88 | 116 | 2 | 3 | 2 | I | 10 | F | 14 |

APPENDIX D

TABLE X

SUMMARY OF CHILDREN'S EXPLANATIONS

(Explanations which appear to show a similar trend of thought are presented together.)

| | Frequency | | | |
|--|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |
| <u>Item 1: The cow in Hey Diddle Diddle</u> | | | | |
| A. Why couldn't a cow do that? | | | | |
| Cows can't jump that far (high). | | 4 | 15 | 19 |
| It's too high. | 1 | 3 | 3 | 7 |
| I don't know (or shrugs). | | 3 | 1 | 4 |
| It's just a story--they're not like a bird; It's only a story; It's just in a picture. | | 2 | 1 | 3 |
| A cow doesn't fly; It don't have wings. | | | 2 | 2 |
| I haven't seen one. | 1 | 1 | | 2 |
| They're not used to it. | 1 | | | 1 |
| Cause. | 1 | | | 1 |
| A cow can't jump up on a moon. | 1 | | | 1 |
| He hasn't got any antlers on. | | 1 | | 1 |
| A cow is supposed to live on a farm. | | 1 | | 1 |
| It walks around on the ground. | | 1 | | 1 |
| Cows don't know how. | | | 1 | 1 |
| Not enough power! | | | 1 | 1 |
| B. How could a cow do that? | | | | |
| I don't know (or shrugs). | 9 | 5 | | 14 |
| The cow jumped over the moon; Hey Diddle Diddle. | 3 | | | 3 |
| Cows can do that. | 1 | 1 | | 2 |
| Cause. | 2 | | | 2 |
| It isn't too high. | 1 | | | 1 |
| He's so big. | 1 | | | 1 |

TABLE X (continued)

| | Frequency | | | |
|---------------------------------|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |
| I think so. | 1 | | | 1 |
| Jump so high. | | 1 | | 1 |
| I saw a cow jump over the moon. | | 1 | | 1 |
| It's real. | 1 | | | 1 |

Item 2: The cat in Hey Diddle Diddle

A. Why can't a cat do that?

| | | | | |
|---|---|---|---|---|
| It can't stand up and walk like people or get dressed; | | | | |
| It needs four feet to walk. | 1 | 3 | 4 | 8 |
| It doesn't know how (only people do). | | 1 | 6 | 7 |
| A cat can't hold it (things, a violin) and put his hand out straight; He has no hands. | 1 | 2 | 3 | 6 |
| It can't stand up on two feet and it can't hold a violin (guitar); It can't stand up and it doesn't have hands like us. | | 2 | 1 | 3 |
| Cats can't play a violin (anything). | | | 3 | 3 |
| Cats aren't supposed to stand up like children; They're not supposed to. | | 1 | 1 | 2 |
| I haven't seen one. | 1 | 1 | | 2 |
| It's just a picture; They're just toys. | | 2 | | 2 |
| A cat isn't like a person. | | | 1 | 1 |
| I don't know (shrugs). | | 1 | | 1 |
| Cause it's a musical instrument. | | | 1 | 1 |
| It's not big enough. | 1 | | | 1 |
| It would have to be a smart cat and a special cat. | 1 | | | 1 |

TABLE X (continued)

| | Frequency | | | |
|---|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |
| Cats don't have brains. | | | 1 | 1 |
| A cat couldn't--he just couldn't! | | | 1 | 1 |
| No wings. | | | 1 | 1 |
| B. How could a cat do that? | | | | |
| I don't know (shrugs). | 7 | 5 | | 12 |
| A cat can do that; He can really; I think he could do that. | 4 | 2 | | 6 |
| The cat and the fiddle; Hey Diddle Diddle. | 3 | 1 | | 4 |
| A real cat could stand up (on his back legs). | 2 | 1 | | 3 |
| He's so big--he can play a fiddle. | 1 | | | 1 |
| He can play and he can walk. | 1 | | | 1 |
| Cats can play a fiddle. | 1 | | | 1 |
| Some cats can walk around. | | 1 | | 1 |
| They sing. | | | 1 | 1 |
| I never saw one do it but it might do it. | | 1 | | 1 |

Item 3: The dish and spoon in
Hey Diddle Diddle

A. Why can't they do that?

| | | | | |
|---|---|---|---|----|
| They can't run (walk)--no legs; It doesn't have legs (feet); They can't even stand up. | 5 | 3 | 5 | 13 |
| They don't have feet (legs) and hands (arms). | 1 | 3 | 8 | 12 |
| Plates don't have feet and hands and faces. | | | 3 | 3 |
| A plate (spoon) doesn't have eyes (faces). | 1 | 2 | | 3 |
| Plates can't run and hold things; The plate can't carry the spoon and run. | | 1 | 2 | 3 |

TABLE X (continued)

| | Frequency | | | Total (N=72) |
|--|----------------------|----------------------|----------------------|-----------------|
| | Group 1 (N=24) | Group 2 (N=24) | Group 3 (N=24) | |
| I don't know. | 2 | 1 | | 3 |
| It's only a picture; It's only a story--no such thing as a spoon got legs and arms. | | 1 | 1 | 2 |
| People eat off them. | | 1 | 1 | 2 |
| They don't know how to do it. Cause. | 1 | 1 | 1 | 2 |
| It doesn't have hands and eyes. | | | 1 | 1 |
| The spoon and plate aren't alive. | | 1 | | 1 |
| (Demonstrates, using her hands.) | 1 | | | 1 |
| I haven't seen any. | 1 | | | 1 |
| It doesn't have faces and feet. | | | 1 | 1 |
| This is a dish and a spoon. | | 1 | | 1 |
| Might break them on the cement. | | | 1 | 1 |
| They don't have hands like us. | | 1 | | 1 |
| B. How could they do that? | | | | |
| I don't know (shrugs). | 6 | 4 | | 10 |
| They're holding hands. | 1 | 1 | | 2 |
| They can fall down. | 1 | | | 1 |
| They've got legs. | 1 | | | 1 |
| It breaks. | 1 | | | 1 |
| That's why they have those things. | 1 | | | 1 |
| It's big enough. | 1 | | | 1 |
| They need to. | | 1 | | 1 |
| See it! | | 1 | | 1 |
| They can do it. | | 1 | | 1 |

TABLE X (continued)

| | Frequency | | | |
|--|----------------------|----------------------|----------------------|-----------------|
| | Group 1 (N=24) | Group 2 (N=24) | Group 3 (N=24) | Total (N=72) |
| Item 4: A dog wearing clothes and standing on his hind legs | | | | |
| A. Why couldn't a dog do that? | | | | |
| He can't stand up (high, on two feet, like children). | 1 | 5 | 3 | 9 |
| There's no such thing as a dog wearing clothes; He couldn't put them on. | 3 | 1 | 5 | 8 |
| I don't know (shrugs). | 3 | 1 | | 4 |
| They can't dance. | | | 3 | 3 |
| They can't laugh. | 1 | | 1 | 2 |
| He doesn't have hands. | 1 | 1 | | 2 |
| He's not supposed to laugh; He's supposed to go in the house. | | 1 | 1 | 2 |
| Dogs can't get up on their feet and walk like people; He can't wear pants and stand up straight like that. | | 1 | 1 | 2 |
| He's not made for standing up on his feet and having pants on. | | 1 | | 1 |
| Cause he's a great big dog. | | | 1 | 1 |
| He's not a strong boy. | 1 | | | 1 |
| He couldn't have feet--he goes on his knees and hands. | | 1 | | 1 |
| They can't laugh and dance. | | | 1 | 1 |
| They can't sing. | | | 1 | 1 |
| They don't do that. | | 1 | | 1 |
| Dogs bark. | | | 1 | 1 |
| B. How could he do that? | | | | |
| Don't know. (Shrugs) | 4 | 1 | | 5 |
| He can stand up (jump up). | 2 | 4 | | 6 |
| He's standing on his back (front) legs. | 2 | 1 | | 3 |

TABLE X (continued)

| | Frequency | | | Total (N=72) |
|--|----------------------|----------------------|----------------------|-----------------|
| | Group 1 (N=24) | Group 2 (N=24) | Group 3 (N=24) | |
| A dog can laugh. | 1 | | 1 | 2 |
| He's begging. | 2 | | | 2 |
| I saw a dog do that. | | 1 | 1 | 2 |
| He sometimes dances and has clothes on. | | 1 | | 1 |
| When he needs to walk. | | 1 | | 1 |
| Dogs do wear clothes. | | | 1 | 1 |
| Dogs can jump up and bark to laugh. | | | 1 | 1 |
| If he took lessons. | | | 1 | 1 |
| Some dogs can. | | 1 | | 1 |
| He's not doing anything. | | | 1 | 1 |
| He could--I saw it in a book. | | 1 | | 1 |
| A dog can dance. | 1 | | | 1 |
| Dogs can do that. | 1 | | | 1 |
| "Ruff, Ruff!" | 1 | | | 1 |

Item 5: The Flying Nun

A. Why wouldn't she be able to
fly if she were here?

| | | | | |
|---|---|---|---|----|
| There's not enough air (wind). | 1 | 4 | 5 | 10 |
| No such thing as that; No person could fly like that; People can't fly; She's an ordinary person like us. | 1 | 1 | 3 | 5 |
| She hasn't any wings. | 1 | 2 | 1 | 4 |
| I don't know (shrugs). | 1 | 3 | | 4 |
| She flies with a string. | | | 3 | 3 |
| She doesn't fly--the pic- ture's like that; People can't fly--it's only a film. | | | 2 | 2 |
| There's a roof on here. | | 1 | | 1 |
| But she could with a jet pack. | | | 1 | 1 |

TABLE X (continued)

| | Frequency | | | |
|---|----------------------|----------------------|----------------------|-----------------|
| | Group 1 (N=24) | Group 2 (N=24) | Group 3 (N=24) | Total (N=72) |
| Not really true--she doesn't have wings. | | | 1 | 1 |
| It's not windy enough and she hasn't any wings. | | | 1 | 1 |
| No nun can fly but she has a hat with long things. | | | 1 | 1 |
| Air couldn't carry a person even though light. | | | 1 | 1 |
| B. How is she able to fly? | | | | |
| She has wings. | 8 | 1 | 1 | 10 |
| I don't know. | 1 | 1 | 3 | 5 |
| She has some kind of hat; She has wings on her hat; her head (indicates). | 2 | 2 | 1 | 5 |
| With her arms (up); With her hands out. | 1 | 2 | | 3 |
| Up in the air like a birdie (bird). | 2 | | | 2 |
| But there's not much room in here. | | 1 | | 1 |
| She has a cape. | | 1 | | 1 |
| She's got white clothes on. | | 1 | | 1 |
| She just starts to fly. | | 1 | | 1 |
| (Indicates by flapping arms). | 1 | | | 1 |
| She's the Flying Nun. | 1 | | | 1 |
| The wind comes and then she flies. | | 1 | | 1 |
| Like an airplane. | 1 | | | 1 |
| She can fly. | 1 | | | 1 |
| She's not big. | 1 | | | 1 |
| I could fly if I was an eagle. | 1 | | | 1 |
| She isn't that heavy. | | 1 | | 1 |
| Cause she's big. | | 1 | | 1 |

TABLE X (continued)

| | Frequency | | | |
|---|----------------------|----------------------|----------------------|-----------------|
| | Group 1 (N=24) | Group 2 (N=24) | Group 3 (N=24) | Total (N=72) |
| Item 6: Ghosts | | | | |
| A. How do you know there aren't ghosts around? | | | | |
| I don't know (shrugs). | 2 | 3 | 4 | 9 |
| Allan told me; My brother told me; My sister told me; Mom told me; Mom and Dad and my cousins telled me; Everybody told me. | 3 | 3 | 7 | 13 |
| I've never seen one. | 2 | 1 | 4 | 7 |
| It's just pretending--once I saw them in my house; Just pretend. | | 5 | 1 | 6 |
| I just know. | 3 | 3 | | 6 |
| People make themselves like ghosts; You can see feet--it's people under it. | | | 2 | 2 |
| They're not in the dark; At night there's no ghosts. | | 1 | 1 | 2 |
| Nothing is invisible. | | | 1 | 1 |
| Never felt one--none ever punched me. | | | 1 | 1 |
| Cause. | | 1 | | 1 |
| They would make noises. | | | 1 | 1 |
| They're in cages. | 1 | | | 1 |
| They're just in old fashioned times. | | | 1 | 1 |
| Not here--only in space. | | 1 | | 1 |
| None comes in my room. | | 1 | | 1 |
| I'm not afraid--there's no such thing. | | | 1 | 1 |
| God didn't make it. | | 1 | | 1 |
| B. How do you know there are ghosts around? | | | | |
| I don't know (shrugs). | 4 | | | 4 |
| I saw one under my bed; I saw one before. | 2 | 1 | | 3 |

TABLE X (continued)

| | Frequency | | | |
|------------------------------------|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |
| Cause; Cause they are around. | 1 | 1 | | 2 |
| There could be. | 1 | | | 1 |
| They're really awful. | 1 | | | 1 |
| In the dark. | 1 | | | 1 |
| They hurt people. | 1 | | | 1 |
| I don't know where ghosts live. | 1 | | | 1 |
| There's suppose to be. | 1 | | | 1 |
| I can't say. | | 1 | | 1 |
| I saw a ghost house. | | 1 | | 1 |

Item 7: Jack Frost

A. Why don't you believe that
story?

| | | | | |
|--|---|---|---|---|
| I don't know (shrugs). No ideas. | 1 | 3 | 4 | 8 |
| Cause they grow their own color; They grow into it; They're growing. | | 6 | 2 | 8 |
| Isn't such a thing as Jack Frost; He's not real. | | 1 | 3 | 4 |
| They do it by themselves. | | 1 | 2 | 3 |
| They turn (change) color. | | 1 | 1 | 2 |
| Well, it's only a fairy tale; It's a story. | 1 | | 1 | 2 |
| He doesn't have any hands-- they turn when the weather is nice. | | | 1 | 1 |
| I never saw him, never felt him--they turn themselves. | | | 1 | 1 |
| They change color when they get old. | | | 1 | 1 |
| They turn in the fall. | | | 1 | 1 |
| No one paints them--they turn different colors and die. | | | 1 | 1 |
| Trees just make them that way. | | | 1 | 1 |

TABLE X (continued)

| | Frequency | | | |
|--|----------------------|----------------------|----------------------|-----------------|
| | Group 1 (N=24) | Group 2 (N=24) | Group 3 (N=24) | Total (N=72) |
| The ground gets the same color. | | | 1 | 1 |
| I think, but I'm not sure, that the cold does it. | | | 1 | 1 |
| God colors them. | | 1 | | 1 |
| He has to paint on paper not leaves. | 1 | | | 1 |
| Cause. | | 1 | | 1 |
| Paint doesn't stick onto leaves, the wind does it. | | | 1 | 1 |
| People come and color them. | | 1 | | 1 |
| B. Why do you believe that story? | | | | |
| I don't know (shrugs). | 7 | 3 | 2 | 12 |
| Cause. | 4 | 2 | | 6 |
| He (Jack Frost) paints them. | 2 | 1 | | 3 |
| I think so. | 2 | | | 2 |
| Teacher said; Mummy told me. | 2 | | | 2 |
| They are supposed to be colored in the fall. | | 1 | | 1 |
| Cause he's supposed to. | 1 | | | 1 |
| We never paint them. | 1 | | | 1 |
| It's funny. | 1 | | | 1 |
| Because I saw green leaves come off our trees. | | 1 | | 1 |
| Because they were green. | | 1 | | 1 |
| They can break. | 1 | | | 1 |

Item 8: Fairies

A. How do you know there aren't fairies around?

| | | | | |
|---|---|---|---|---|
| I don't know. | 2 | 3 | 4 | 9 |
| No such things; Mothers are fairies; Mothers give you money under your pillow; I know who gives me pennies. | | 2 | 4 | 6 |

TABLE X (continued)

| | Frequency | | | |
|---|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |
| There aren't any; No such things. | 3 | | 1 | 4 |
| I never saw one; You don't see any. | 1 | 1 | 1 | 3 |
| I just know. | 1 | 2 | | 3 |
| Dad told me; Mother told me. | | | 2 | 2 |
| There are no wands for them to wave and suits for them to wear. | | | 1 | 1 |
| Those are old-fashioned things. | | | 1 | 1 |
| They can't pop up and say "What's your wish?" without you seeing them leave. | | | 1 | 1 |
| Cause. | | | 1 | 1 |
| No people could fly. | | | 1 | 1 |
| They stay up where God is. | | 1 | | 1 |
| Fairies are things you think about--around this land, no one flies. | | 1 | | 1 |
| B. How do you know there are fairies around? | | | | |
| Fairies give me money for my tooth; It gave my sister money; They give you money for teeth. | 1 | 4 | 4 | 9 |
| Allan told me; My mom said; I heard it; Someone told me. | 4 | 1 | 1 | 6 |
| I don't know. | 2 | 1 | 2 | 5 |
| I saw some at Granny's; I saw one before. | 1 | 2 | | 3 |
| I just know. | 1 | 1 | | 2 |
| You wish on a wishing bone--you can't see them and they don't talk. | | 1 | | 1 |
| They are like elves--God made them. | | 1 | | 1 |
| They belong in the world. | | 1 | | 1 |

TABLE X (continued)

| | Frequency | | | Total (N=72) |
|---|----------------------|----------------------|----------------------|-----------------|
| | Group 1 (N=24) | Group 2 (N=24) | Group 3 (N=24) | |
| They're nice. | | 1 | | 1 |
| In a dream. | | 1 | | 1 |
| They're suppose to be. | 1 | | | 1 |
| In shows. | 1 | | | 1 |
| Just is. | 1 | | | 1 |
| Cause. | 1 | | | 1 |
| They want to be. | 1 | | | 1 |
| They're in trees. | 1 | | | 1 |
| They fly. | 1 | | | 1 |
| It lives in the woods and woodcutters cut trees down. | 1 | | | 1 |

Item 9: Tadpole-frog

A. Why do you think that
couldn't happen?

| | | | | |
|--|---|---|---|---|
| They're too little (small). | 1 | | 3 | 4 |
| I don't know (shrugs). | 1 | 2 | 1 | 4 |
| Couldn't; Can't. | 2 | | | 2 |
| Cause. | 1 | 1 | | 2 |
| Frogs don't have tails. | | 1 | 1 | 2 |
| Animals can't grow into other things. | | 1 | | 1 |
| No front legs, doesn't have the lumpy back. | | | 1 | 1 |
| Just doesn't look like a frog. | | | 1 | 1 |
| It's not a frog face--it looks like a fish. | | | 1 | 1 |
| Cause they can't lay eggs. | | | 1 | 1 |
| They can't hide under water. | | 1 | | 1 |
| There's no mouth. | | 1 | | 1 |
| Hen's eggs. | 1 | | | 1 |

B. How do you think that could
happen?

| | | | | |
|------------------------------|---|---|---|----|
| I don't know (shrugs). Well- | 5 | 3 | 3 | 11 |
|------------------------------|---|---|---|----|

TABLE X (continued)

| | Frequency | | | |
|--|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |
| He eats lots of food; He could with food; Fedded them too much; They eat fruit. | 3 | 3 | 1 | 7 |
| He gets big (bigger) and big (bigger) and big (bigger) and then turns into a frog; just grewed; The baby frog just grows up. | 2 | 2 | 3 | 7 |
| By growing and eating; He eats and grows inside him. | | | 2 | 2 |
| I saw one. | | 1 | 1 | 2 |
| It's a baby frog; Because these are tadpoles and they're made to grow into frogs; Babies turn into a frog. | | 1 | 2 | 3 |
| Mom tells me; Allan knows everything. | 1 | 1 | | 2 |
| He's suppose to--he needs to grow. | 1 | | 1 | 2 |
| The egg hatches and it swims until it's big and then it turns into a frog--it develops legs. | | | 1 | 1 |
| It gets bigger every time it hops. | | 1 | | 1 |
| Opens his mouth and goes down to the stomach. | | 1 | | 1 |
| Only in rivers. | | 1 | | 1 |
| It did once. | | 1 | | 1 |
| A little door opens here and lets him in. | 1 | | | 1 |
| Cause frogs hop like this (demonstrates). | 1 | | | 1 |
| Just can. | 1 | | | 1 |
| I think they could. | 1 | | | 1 |
| Cause it lives in there and hides in there. | 1 | | | 1 |
| It'll probably change. | | | 1 | 1 |

TABLE X (continued)

| | Frequency | | | |
|-------------------------------------|----------------------|----------------------|----------------------|-----------------|
| | Group 1 (N=24) | Group 2 (N=24) | Group 3 (N=24) | Total (N=72) |
| I heard a story about it. | | 1 | | 1 |
| They're growing into baby frogs. | | 1 | | 1 |
| (Inarticulate answer) | 1 | | | 1 |

Item 10: The Sleeping Beauty

A. Why couldn't that happen?

| | | | | |
|---|---|---|---|---|
| You would wake up in the morning (before that); People couldn't keep their eyes closed that long; Couldn't stay asleep long enough; Cause it's longer than a night; I'd wake up; She sleeps a little while, then wakes up; You can only sleep till late in the morning. | 2 | 3 | 4 | 9 |
| I don't know (shrugs or no response). | 4 | 1 | 4 | 9 |
| She'd die before she woke up; Dead by then; Cause you don't live that long; You don't live a hundred years. | | 1 | 5 | 6 |
| They'll die--no food (no water). | | 2 | 2 | 4 |
| Cause; Just couldn't. | | 2 | 2 | 4 |
| If it was magic; It's not magic. | | 1 | 1 | 2 |
| Cause they're people. | 1 | | 1 | 2 |
| Allan told me; Mom telled me. | 1 | 1 | | 2 |
| They couldn't ever wake up. | 2 | | | 2 |
| I've never seen a spinning wheel. | | 1 | | 1 |
| Not supposed to. | | 1 | | 1 |

TABLE X (continued)

| | Frequency | | | |
|--|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |
| Jesus could--if it was noisy or a storm night they would wake up. | | | 1 | 1 |
| I couldn't--guess Mom and Dad could. | 1 | | | 1 |
| Mommy won't let me. | 1 | | | 1 |
| You'd get frozen. | | 1 | | 1 |
| If something came and you catch it. | 1 | | | 1 |
| A hundred years is too long--if they had child- ren--children would wake them up. | | | 1 | 1 |
| They'd have no food. | | | 1 | 1 |
| Cause they eat too much lunch. | | 1 | | 1 |
| I don't think so. | | 1 | | 1 |
| Cause I don't like it. | | 1 | | 1 |
| B. How could that happen? | | | | |
| I don't know (shrugs or no response). | 3 | 3 | | 6 |
| Could sleep in: I had a long sleep; If you're sleepy; Easy--sleep real long. | 3 | | 1 | 4 |
| If it was dark. | 1 | | | 1 |
| I think so. | 1 | | | 1 |
| You can sleep all night. | 1 | | | 1 |
| You can in your mother's bedroom. | 1 | | | 1 |
| Cause. | 1 | | | 1 |
| But I've never done it. | | 1 | | 1 |
| I did it once. | | 1 | | 1 |
| If they were a grown-up. | | 1 | | 1 |
| By a prince. | | 1 | | 1 |
| You'd need magic pins in these days. | | | 1 | 1 |

TABLE X (continued)

| | Frequency | | | Total |
|--|----------------------|----------------------|----------------------|-------|
| | Group 1 (N=24) | Group 2 (N=24) | Group 3 (N=24) | |
| Item 11: Giants | | | | |
| A. How do you know there aren't giants around? | | | | |
| I've never seen one; I haven't seen one around; Never seen his footprints. | 2 | 3 | 7 | 12 |
| No such thing--could be that they couldn't grow so big; Nobody big enough; People don't grow up to a giant--they die; No people could be bigger than that. | | | 6 | 6 |
| In <u>Jack and the Beanstalk</u> --that's not a true story; Only in stories; Only on T.V.; Just friendly. | 1 | 2 | 2 | 5 |
| Mommy said so; My brother told me; Jeannie said. | 1 | 3 | | 4 |
| Cause I just know; just sure. | 1 | 2 | 1 | 4 |
| I don't know (shrugs). | 2 | | 1 | 3 |
| There aren't--there is none; There couldn't be; I'm sure. | 1 | | 2 | 3 |
| They are just pretend. | | 2 | | 2 |
| They don't live in this world (country). | | 2 | | 2 |
| They wouldn't fit in a building; They'd need big castles. | | | 2 | 2 |
| I thought about it. | | | 1 | 1 |
| Just dreams--not around. | 1 | | | 1 |
| They were only in the big time. | | | 1 | 1 |
| Not suppose to be. | | 1 | | 1 |
| If there were giants, the whole town would be smashed. | | 1 | | 1 |
| They didn't see me. | | 1 | | 1 |

TABLE X (continued)

| | Frequency | | | |
|--|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |
| Sometimes we call them giants but they really aren't giants. | | | 1 | 1 |
| Cause there are no castles. | 1 | | | 1 |
| B. How do you know there are giants? | | | | |
| I don't know (shrugs, no response). | 3 | | | 3 |
| They hurt dogs (people). | 2 | | | 2 |
| I saw one in the circus; I saw one outside. | 1 | 1 | | 2 |
| Cause (Because). | 2 | | | 2 |
| Tarzan is a giant; There's the <u>Friendly Giant</u> . | 2 | | | 2 |
| They live in a castle--no- body else lives in a castle. | | 2 | | 2 |
| But they don't live in these countries. | | 1 | | 1 |
| Maybe. | | 1 | | 1 |
| They grow that way. | | 1 | | 1 |
| They're outside. | | 1 | | 1 |
| There's a giant but I don't like them. | 1 | | | 1 |
| There are. | 1 | | | 1 |
| At night-- | 1 | | | 1 |
| There is suppose to be--eat carrots and hot dogs. | 1 | | | 1 |

Item 12: The plant and the
magnifying glass

A. Why does it look bigger? or
Did it grow?

| | | | | |
|---|---|---|----|----|
| (A reference to the magni- fying glass). | 3 | 9 | 22 | 34 |
| I don't know. | | 1 | 1 | 2 |

TABLE X (continued)

| | Frequency | | | |
|--|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |

Couldn't grow--needs more
water and you have to
wait a couple of days.

1

1

Note: If answer was "Yes" to
the "Did it grow?" question,
no further explanation was
requested.

Item 13: Dragons

A. Why wouldn't you ever be able to see a real live dragon?

There's no such thing:

They're not real; There's
none; There isn't really
any.

3

2

6

11

I don't know (shrugs or no
response).

2

2

4

They're just in stories
(and plays); Only on T.V.

1

2

1

4

No such thing--I've never
seen one; No one has seen
one.

3

3

Mom tells me; My brother
telled me; No such thing--
I looked it up in the
dictionary.

1

2

3

I think they're dead; They're
extinct--not alive any
more.

2

2

I just know.

2

2

I know a story about that;
Cause dragons are in the
forest in stories.

2

2

Because I don't like dragons.

1

1

They're toys.

1

1

I saw one in Calgary.

1

1

Not in the world.

1

1

TABLE X (continued)

| | Frequency | | | Total (N=72) |
|--|----------------------|----------------------|----------------------|-----------------|
| | Group 1 (N=24) | Group 2 (N=24) | Group 3 (N=24) | |
| Cause. | | 1 | | 1 |
| Because if there were dragons, they'd burn the whole town. | | 1 | | 1 |
| B. Where could you see one? | | | | |
| In the river (water, sea, ocean, lake or zoo); In Vancouver; In the countryside; In the jungle; Outside. | 6 | 5 | 4 | 15 |
| I don't know (shrugs, no response). | 6 | 2 | 1 | 9 |
| There are real live dragons around here. | | 1 | 1 | 2 |
| It's got fire in its mouth-- think I'll go with my Daddy and he'll show me a dragon. | 1 | | | 1 |
| Cause. | 1 | | | 1 |
| In traps. | 1 | | | 1 |
| They can't come on a busy street. | | | 1 | 1 |
| If I hear one. | | | 1 | 1 |
| Not any here. | 1 | | | 1 |
| Can pretend. | | 1 | | 1 |
| I haven't seen them. | | 1 | | 1 |
| On T.V. | | 1 | | 1 |

Item 14: The wolf eating the grandmother in Little Red Riding Hood

A. Why couldn't that really happen?

| | | | |
|---|---|----|----|
| She's too big; No one could fit in; The wolf doesn't have a big enough mouth; The lady was too big. | 1 | 10 | 11 |
|---|---|----|----|

TABLE X (continued)

| | Frequency | | | |
|---|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |
| She'd be hurted (chewed up, bitten, all in bits); No wolf can swallow people without chewing them; Who eats something, they chew it; He'd chew her with his teeth and she'd be dead--can't get alive again; Cause the fox couldn't eat her without the person being hurt; She'd probably be dead. | 1 | 2 | 7 | 10 |
| There are no wolves; There's no such thing as a wolf--anyway she'd be a little injured; No such thing as a wolf--he wouldn't have a big enough mouth; No wolves--you can't cut a stomach open while they're sleeping; No such thing as wolves--she'd be bitten; Cause there's no such thing as a wolf--he'd be dead because he'd be open. | 2 | 2 | 3 | 7 |
| I don't know (shrugs). | 4 | 1 | | 5 |
| Cause. | | 4 | 1 | 5 |
| That's just a story. | 1 | 1 | | 2 |
| Allan told me; Mommy telled me. | 1 | 1 | | 2 |
| I just don't think so. | 2 | | | 2 |
| I don't think so--he'd eat you up. | | 1 | | 1 |
| Cause wolves can't get in houses. | | | 1 | 1 |
| Wolves don't--she'd get stuck. | | 1 | | 1 |
| I never tried it. | | | 1 | 1 |
| I never seen it happened. | 1 | | | 1 |
| I never heard it. | | 1 | | 1 |
| (Inarticulate answer) | | 1 | | 1 |

TABLE X (continued)

| | Frequency | | | |
|---|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |
| B. How could that happen? | | | | |
| I don't know (shrugs). | 5 | 1 | | 6 |
| (Inarticulate answer). | 3 | | | 3 |
| Get a knife; With a sharp knife; A knife can open tigers. | 1 | 1 | 1 | 3 |
| Cause. | 1 | 1 | | 2 |
| Cause the wolf ate her. | 1 | | | 1 |
| I saw it once. | | 1 | | 1 |
| It happens but quick enough. | 1 | | | 1 |
| Yes, but not really real. | | 1 | | 1 |
| I think so. | | 1 | | 1 |
| Outside. | | 1 | | 1 |
| A woodsman could do it. | | 1 | | 1 |

Item 15: Elves

A. What makes you think there
aren't elves?

| | | | | |
|---|---|---|---|---|
| I've never seen them. | 1 | 1 | 3 | 5 |
| Cause; Hard to say. | 1 | 2 | 1 | 4 |
| I don't know (shrugs, no response). | 2 | 1 | | 3 |
| Just sure; Just know. | | 1 | 1 | 2 |
| Because they are so small; People keep on growing until they are big. | | | 2 | 2 |
| Cause shoemakers were in the old-fashioned days. | | | 1 | 1 |
| No such thing--I think it in my mind. | | | 1 | 1 |
| Cause there's no such thing as Santa Claus. | | | 1 | 1 |
| They are only in fairy tales. | | | 1 | 1 |
| Mom told me there wasn't such a thing. | | | 1 | 1 |
| There couldn't be little people wearing shoes like us. | | | 1 | 1 |

TABLE X (continued)

| | Frequency | | | |
|--|-------------|-------------|-------------|--------|
| | Group | Group | Group | Total |
| | 1 (N=24) | 2 (N=24) | 3 (N=24) | (N=72) |
| Comes in a bottle. | 1 | | | 1 |
| They go on and work all day. | 1 | | | 1 |
| I wouldn't like them very good. | 1 | | | 1 |
| There couldn't be. | | | 1 | 1 |
| They are just little girls. | 1 | | | 1 |
| B. What makes you think there are elves? | | | | |
| Because Santa has them; | | | | |
| They help Santa. | 3 | 6 | 6 | 15 |
| I don't know (shrugs, no response). | 4 | 2 | 1 | 7 |
| You might see them if you were hiking in the woods (at the circus, in the oven, in the country). | 1 | 3 | 1 | 5 |
| I think so; I just know. | 3 | 1 | | 4 |
| Mom told me; Allan told me. | 1 | 2 | | 3 |
| In a hole in our tree there's one; I've seen one in the woods. | 1 | 2 | | 3 |
| I see them on T.V.--on commercials; For instance, an elf in the <u>Flintstones</u> . | | 1 | 1 | 2 |
| They are little. | | 1 | | 1 |
| They pound shoes. | 1 | | | 1 |
| There is suppose to be. | 1 | | | 1 |
| They turn into frogs deep in the water. | | | 1 | 1 |
| Yes, but I've never seen some. | | 1 | | 1 |
| Just open him up. | 1 | | | 1 |

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